MERCURY®

GO BOLDLY.™

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Operation and Maintenance Manual

Avator 75e/110e Electric Outboard

Scan for service and support information

Welcome

You have selected one of the finest marine power packages available. It incorporates numerous design features to ensure operating ease and durability. With proper care and maintenance, you will enjoy using this product for many boating seasons. To ensure maximum performance and carefree use, we ask that you thoroughly read this manual before operating the outboard.

The Operation and Maintenance Manual contains specific instructions for using and maintaining your product. Keep this manual with the product for reference whenever you are on the water. This manual should stay with the outboard, if it is sold.

Thank you for purchasing one of our products. We sincerely hope your boating will be pleasant.

Mercury Marine, Fond du Lac, Wisconsin, U.S.A.

Read This Manual Thoroughly

IMPORTANT: Your dealer can provide a demonstration of starting and operating procedures. If you do not understand any portion of this manual, contact your dealer.

Safety Alerts

Throughout this publication and on your power package, safety alerts labeled WARNING and CAUTION (accompanied by the symbol ⚠), are used to alert you to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe these alerts carefully.

These safety alerts alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus common sense operation, are major accident prevention measures.

⚠ WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Additional Alerts

Additional alerts provide information that requires special attention:

NOTICE

Indicates a situation which, if not avoided, could result in motor damage, battery damage, or component failure.

IMPORTANT: Identifies information essential to the successful completion of the task.

NOTE: *Indicates information that helps in the understanding of a particular step or action.*

California Proposition 65

CA WARNING: This product contains chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information, see www.P65Warnings.ca.gov/marine-vessel-parts.

Notice to Users of This Manual

IMPORTANT: The operator (driver) is responsible for the correct and safe operation of the boat, the equipment aboard, and the safety of all occupants aboard. The operator is strongly encouraged to read this Operation and Maintenance Manual to thoroughly understand the operational instructions for the power package and all related accessories before the boat is used.

Descriptions and specifications contained herein were in effect at the time this was approved for distribution. Mercury Marine, whose policies are based on continuous improvement, reserves the right to discontinue models at any time or to change specifications or designs without notice and without incurring obligation.

Warranty Message

The product you have purchased comes with a **Mercury Marine Limited Warranty**. The terms of the warranty are set forth in the Warranty Manual, which can be accessed any time on the Mercury Marine website, at http://www.mercurymarine.com/warranty-manual. The Warranty Manual contains a description of what is covered, what is not covered, the duration of coverage, how to best obtain warranty coverage, **important disclaimers, limitations, and waivers**, and other related information. Please review this important information.

Mercury Marine products are designed and manufactured to comply with our own high quality standards, applicable industry standards and regulations, and certain emissions regulations. At Mercury Marine every outboard is operated and tested before it is boxed for shipment to make sure that the product is ready for use. In addition, certain Mercury Marine products are tested in a controlled and monitored environment, for up to 10 hours of run time, in order to verify and make a record of compliance with applicable standards and regulations. All Mercury Marine product, sold as new, receives the applicable limited warranty coverage, whether the outboard participated in one of the test programs described above or not.

This manual contains information required for the safe and proper operation and maintenance of the product. Use of the product not in accordance with any and all instructions for operation and maintenance outlined in this manual will be considered as improper, abnormal, abusive or non-acceptable use of the product and may result in the Mercury Marine Limited Warranty or legal guarantee (if and where applicable) being fully or partly void.

Copyright and Trademark Information

Important Safety Information

General Information

Battery

Installation

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Features and Controls

Operation

Maintenance

Outboard Storage

Troubleshooting

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Predelivery Inspection (PDI)

IMPORTANT SAFETY INFORMATION

Boater's Responsibilities

The operator (driver) is at all times responsible for the correct and safe operation of the boat and the safety of its occupants and the general public. Each operator should read and understand this entire manual before operating the outboard.

At least one additional person onboard should be instructed in the basics of starting and operating the outboard and boat handling, in case the driver is unable to operate the boat.

The operator may be subject to local boating license requirements, which may vary according to boating location.

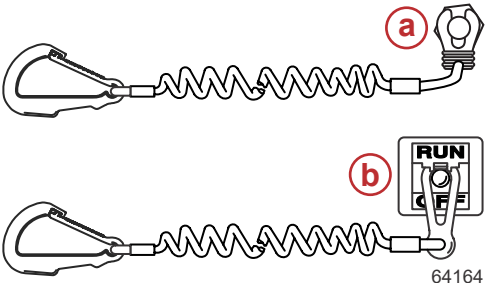
Lanyard Stop Switch

The purpose of a lanyard stop switch is to stop the outboard when the operator moves far enough away from the operator's position (as in accidental ejection from the operator's position) to activate the switch. Tiller handle outboards are equipped with a lanyard stop switch. Remote control models require a separate lanyard stop switch, typically installed on the dashboard or side adjacent to the operator's position.

A decal near the lanyard stop switch provides a visual reminder for the operator to attach the lanyard to their personal flotation device (PFD) or wrist.

IMPORTANT: Do not add length to the lanyard cord beyond the original length. Any length extension of the original lanyard cord can result in propeller strike injuries including death, if the operator falls overboard.

The lanyard cord is usually 122–152 cm (4–5 feet) in length when stretched out, with an element on one end that inserts into the switch and a clip on the other end that attaches to the operator's PFD or wrist. The lanyard cord is coiled to prevent entanglement with nearby objects. The cord's extended length minimizes accidental activation should the operator choose to move around in an area close to the normal operator's position. If a shorter lanyard is desired, wrap the lanyard around the operator's wrist or leg, or tie a knot in the lanyard.



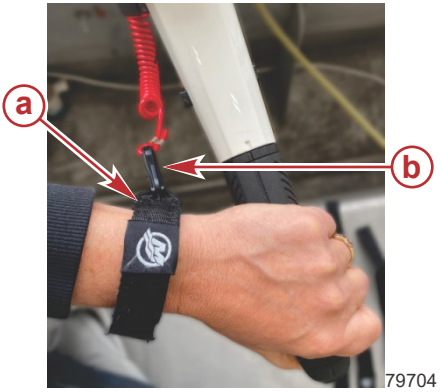
Lanyard stop switch and cord examples

a – Button style lanyard switch

b – Toggle style lanyard switch

Lanyard Wrist Strap

A wrist strap makes it convenient to attach the lanyard to the operator's wrist. The strap encircles the operator's wrist, and the lanyard clip attaches to the strap, as shown. Adjust the diameter of the strap so that it cannot slip off the wrist during use.



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a - Wrist strap
b - Lanyard clip

The wrist strap is standard equipment for all tiller handle outboard models. It is recommended optional equipment for all other models. The wrist strap is available in both Mercury Marine and Quicksilver branding.

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Lanyard Stop Switch and Safe Operation

⚠ WARNING

If the operator falls out of the boat, stop and power off the outboard immediately to reduce the possibility of serious injury or death from being struck by the boat. Always properly connect the operator to the stop switch using a lanyard.

IMPORTANT: Instruct at least one other boat occupant on proper starting and operating procedures, should they be required to operate the boat in an emergency.

Activation of the lanyard stop switch will stop the outboard immediately. However, a boat will continue to coast for some distance depending upon the velocity and degree of any turn at shutdown. While the boat is coasting, it can cause injury to anyone in the boat's path as seriously as it would when under power.

The lanyard stop switch stops the outboard whenever the operator moves far enough away from the operator's position to activate the switch. This occurs if:

- The operator accidentally falls overboard, or
- The operator moves within the boat away from the operator's position.

Falling overboard and accidental ejections are more likely to occur in certain types of boats such as:

- Low-sided inflatables
- Bass boats
- High performance boats
- Light, sensitive-handling fishing boats operated by a hand tiller

Falling overboard and accidental ejections are also likely to occur as a result of poor operating practices such as:

- Sitting on the back of the seat or gunwale at planing speeds
- Standing at planing speeds
- Sitting on elevated fishing boat decks
- Riding in forward seating (such as in a bow rider) at planing speeds in rough water
- Operating at planing speeds in shallow or obstacle filled waters
- Releasing a steering wheel or tiller handle that is pulling in one direction
- Drinking alcohol or consuming drugs
- Performing high-speed boat maneuvers

Accidental or unintended activation of the switch during normal operation is also a possibility. This could cause any, or all, of the following potentially hazardous situations:

- Occupants could be thrown forward due to unexpected loss of forward motion - a particular concern for passengers in the front of the boat who could be ejected over the bow and possibly struck by the boat.
- Loss of power and directional control in heavy seas, strong current, or high winds.
- Loss of control when docking.

To avoid accidental switch activation, the operator should always be aware of their position in relation to the lanyard stop switch and should:

- Never move away from the operating position while the boat is in motion.
- Never move away from the operating position while the boat is stationary without first disconnecting the lanyard from their person.

Keep the Lanyard Stop Switch and Lanyard Cord in Good Operating Condition

Before each use, check to ensure that the lanyard stop switch works properly. Power up, engage the outboard, and pull the lanyard cord. If the outboard does not stop, have the switch repaired before operating the boat.

Before each use, visually inspect the lanyard cord to ensure it is in good working condition and that there are no breaks, cuts, or wear to the cord. Check that the clips on the ends of the cord are in good condition. Replace any damaged or worn lanyard cords.

Safe Operating Practices

Passenger Safety - Pontoon Boats and Deck Boats

Whenever the boat is in motion, observe the location of all passengers. Do not allow any passengers to stand or use seats other than those designated for traveling faster than idle speed. A sudden reduction in boat speed, such as plunging into a large wave or wake, a sudden throttle reduction, or a sharp change of boat direction, could throw them over the front of the boat. Falling over the front of the boat between the two pontoons will position them to be run over by the outboard.

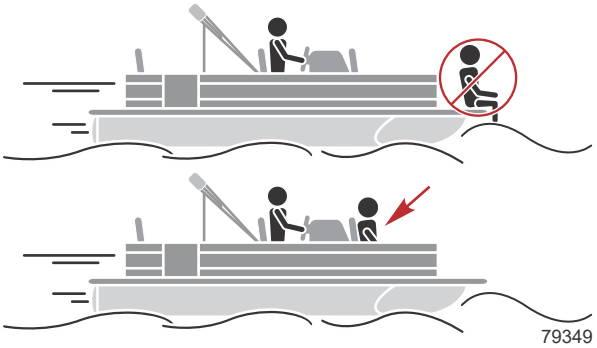
Boats with an Open Front Deck

⚠ WARNING

Sitting or standing in an area of the boat not designed for passengers at speeds above idle can cause serious injury or death. Stay back from the front end of deck boats or raised platforms and remain seated while the boat is in motion.

No one should ever be on the deck in front of the fence while the boat is in motion. Keep all passengers behind the front fence or enclosure.

Persons on the front deck could easily be thrown overboard or persons dangling their feet over the front edge could get their legs caught by a wave and pulled into the water.



Boats with Front-Mounted, Raised Pedestal Fishing Seats

Elevated fishing seats are not intended for use when the boat is traveling faster than idle or trolling speed. Sit only in seats designated for traveling at faster speeds.

Any unexpected, sudden reduction in boat speed could result in the elevated passenger falling over the front of the boat.

Protecting People in the Water

While Boat is in Operation

People in the water cannot take quick action to avoid a boat heading in their direction.

Approach slowly and exercise extreme caution when boating in areas where people may be in the water.

When a boat is moving and the controller shift position is in neutral, there is sufficient force by the water on the propeller to cause the propeller to rotate. This neutral propeller rotation can cause serious injury.

While the Boat is Stationary

⚠ WARNING

A spinning propeller, a moving boat, or any solid device attached to the boat can cause serious injury or death to swimmers. Stop and power down the outboard immediately whenever anyone in the water is near the boat.

Shift into neutral and power off the outboard before allowing people in the water near the boat.

Safe Boating Recommendations

To safely enjoy the waterways, boat operators must be familiar with local and all other governmental boating regulations and restrictions. Boaters should also consider the following suggestions.

- **Know and obey all nautical rules and laws of the waterways.**
  - All powerboat operators are advised to complete a boating safety course. In the U.S., the U.S. Coast Guard Auxiliary, the Power Squadron, the Red Cross, and the state or provincial boating law enforcement agency provide courses. For more information, visit the Boat U.S. Foundation website at https://boatus.org/.
  - Some locations (states, territories, etc.) *require* a boating license or certificate. Always confirm licensing and certification requirements prior to boating in a new location.
- **Perform safety checks and required maintenance.** Follow a regular schedule and ensure that all repairs are properly made.
- **Check onboard safety equipment.** Regulating bodies in most areas *require* specific safety equipment on every powered boat. Even if not required, consider carrying the following on board, and always check the condition before each outing:
  - Approved fire extinguishers
  - Paddle or oar
  - Two-way radio
  - Weather radio
  - Compass and map or chart of the area
  - Signal devices: flashlight, rockets or flares, flag, and whistle or horn
  - Drinking water
  - First aid kit and instructions
  - Waterproof storage containers
  - Anchor and extra anchor line
  - Spare operating equipment, batteries, bulbs, and fuses
  - Manual bilge pump and extra drain plugs
  - Tools necessary for minor repairs
- **Watch for signs of weather change and avoid foul weather and rough-sea boating.**
- **Tell someone of the boating plans, including the expected route and estimated time of return.**
- **Passenger boarding:** Stop and power off the outboard whenever passengers are boarding, unloading, or are near the back (stern) of the boat. Shifting the drive unit into neutral is not sufficient.

- **Use personal flotation devices (PFDs).**
  - U.S. federal law *requires* that there be a U.S. Coast Guard-approved life jacket (personal flotation device), correctly sized and readily accessible for every person onboard, plus a type 4 throwable cushion or ring. It is strongly advised that everyone wear a life jacket at all times while in the boat.
  - U.S. federal law *requires* children 13 years of age and younger to wear a U.S. Coast Guard-approved personal flotation device while the boat is underway.
  - Use of personal flotation devices may be *mandatory* in areas outside of the U.S. Always check local laws and regulations before embarking.
  - Inspect the condition of all PFDs prior to embarking.
- **Prepare other boat operators.** Instruct at least one person onboard on the basics of starting and operating the outboard and boat handling in case the driver becomes disabled or falls overboard. This includes showing the person the location of the spare lanyard clip.
- **Do not overload the boat.** Most boats are rated and certified for maximum load (weight) capacities (refer to the boat's capacity plate). Know the boat's operating and loading limitations. Know if the boat will float if it is full of water. When in doubt, contact a Mercury Marine Authorized Dealer or the boat manufacturer.
- **Ensure that everyone in the boat is properly seated.** Do not allow anyone to sit or ride on any part of the boat that was not intended for such use. This includes:
  - Backs of seats
  - Gunwales
  - Transom
  - Bow
  - Decks
  - Raised fishing seats
  - Any rotating fishing seat

  Passengers should not sit or ride anywhere that sudden unexpected acceleration, sudden stopping, unexpected loss of boat control, or sudden boat movement could cause them to be thrown overboard or into the boat. Ensure that all passengers have a proper seat and are in it before any boat movement.
- **Never operate a boat while under the influence of alcohol or drugs. It is the law.** Alcohol or drugs can impair human judgment and greatly reduce the ability to react quickly.
- **Know the boating area and avoid hazardous locations.**

- **Be alert.** The operator of the boat is responsible by law to maintain a proper lookout by sight and hearing. The operator must have an unobstructed view, particularly to the front. No passengers, load, or fishing seats should block the operator's view when the boat is above idle or planing transition speed. Watch out for others, the water, and the wake.
- **Never drive the boat directly behind a water-skier.** A boat traveling at speeds above 16 km/h (10 mph) can overtake a fallen skier before driver reactions can have an affect on boat course or speed.
- **Observe safe practices for using the boat for skiing, wake-boarding, or similar activity.**
  - A minimum of two persons should be onboard the boat whenever a skier is in the water: one to drive the boat and one to act as a spotter (facing the skier at all times).
  - Always keep a fallen or down skier on the operator's side of the boat while returning to attend to the skier. The operator should always have the down skier in sight and never back up to the skier or anyone in the water.
  - Some U.S. states and Canadian provinces require a "skier down" flag, have restrictions on spotter age, have rearview mirror requirements, and so forth. Know and obey all federal, state (provincial), and local laws and regulations.
- **Report accidents.**
  - In the U.S., boat operators are *required* by law to file a boating accident report with their state boating law enforcement agency when their boat is involved in certain boating accidents. A boating accident must be reported if:
    i. There is loss of life or probable loss of life.
    ii. There is personal injury requiring medical treatment beyond first aid.
    iii. There is damage to boats or other property where the damage value exceeds $2,000.00 (lower amounts in some states and territories).
    iv. There is complete loss of the boat.

    Seek further assistance from local law enforcement.
  - Accident reporting requirements may vary in areas outside the U.S.

Wave and Wake Jumping

⚠ WARNING

Wave or wake jumping can cause serious injury or death from occupants being thrown within or out of the boat. Avoid wave or wake jumping whenever possible.

Operating recreational boats over waves and wake is a natural part of boating. However, when this activity is done with sufficient speed to force the boat hull partially or completely out of the water, certain hazards arise, particularly when the boat re-enters the water.

The primary concern is the boat changing direction while in the midst of the jump. In such case, the landing may cause the boat to spin or veer violently in a new direction. Such a sharp change in direction can cause occupants to be thrown out of their seats, or out of the boat.

There is another less common hazardous result from allowing a boat to launch off a wave or wake. If the bow of the boat pitches down far enough while airborne, upon water contact it may penetrate under the water surface and submarine for an instant. This will bring the boat to a nearly instantaneous stop and can send the occupants flying forward. The boat may also steer sharply to one side.

Impact with Underwater Hazards

⚠ WARNING

Operating a boat or outboard with impact damage can result in product damage, serious injury, or death. If the boat experiences any form of impact, have an authorized Mercury Marine dealer inspect and repair the boat or power package.

The outboard is designed to absorb impacts with underwater objects at low speeds with no permanent damage to components. At higher speeds, the force of the impact may exceed the system's ability to absorb the energy of the impact and cause serious product damage.

No impact protection exists while in reverse. Use extreme caution when operating in reverse to avoid striking underwater objects.

Reduce speed and proceed with caution when driving a boat in shallow water areas or in areas where underwater obstacles may exist that could be struck by the outboard or the boat bottom. **The most significant action the operator can take to help reduce injury or impact damage from striking a floating or underwater object is to control the boat speed. Under these conditions, boat speed should be kept 1.5 to 8 km/h (1 to 5 mph)**.

⚠ WARNING

Avoid serious injury or death from all or part of an outboard or drive unit coming into the boat after striking a floating or underwater object. When operating in waters where objects may be at the surface or just under the surface of the water, reduce your speed and keep a vigilant lookout.

Examples of objects that can cause outboard damage are dredging pipes, bridge supports, wing dams, trees, stumps, and rocks.

Striking a floating or underwater object could result in any number of situations. Some of these situations could yield the following:

- Part of the outboard or the entire outboard could break loose and fly into the boat.
- The boat could move suddenly in a new direction. A sharp change in direction can cause occupants to be thrown out of their seats or out of the boat.
- The boat's speed could rapidly reduce. This will cause occupants to be thrown forward or even out of the boat.
- The outboard or boat could sustain impact damage.

After striking a submerged object, stop the outboard as soon as possible and inspect it for any broken or loose parts. If damage is present or suspected, the outboard should be taken to an authorized dealer for a thorough inspection and necessary repair.

The boat should also be checked for any hull fractures, transom fractures, or water leaks. If water leaks are discovered after an impact, immediately activate the bilge pump.

Operating a damaged outboard could cause additional damage to other parts of the outboard or could affect control of the boat. If continued running is necessary, do so at greatly reduced speeds.

SmartCraft Connect and the Mercury Marine App

The Mercury Marine App provides useful information such as links to the operations manual, quick reference guides, helpful tutorials, and mapping functionality. The Mercury Marine App will also provide data from the outboard or battery through the wireless connection to the SmartCraft Connect.

The 75e/110e outboards come standard with a SmartCraft Connect.

1. Tiller models–Using the Mercury Marine app, locate and record the last four digits of the serial number.
2. Remote control models–The serial number can be obtained from the body of the SmartCraft Connect.

NOTE: *The last four digits of the SmartCraft Connect are required to connect it to the phone over Bluetooth® pairing.*

3. Follow all instructions found in the Mercury Marine App for pairing the phone to the outboard.
4. **SmartCraft Connect Serial Number**

SN:

5. Android™ devices - Navigate to the Google Play App Store™ for downloading the Mercury Marine App.
6. iOS™ devices - Navigate to the Apple AppStore™ for downloading the Mercury Marine App.

Registering the Outboard and Battery

Registration of the outboard and battery is required in order to be eligible for warranty coverage.

Warranty coverage is not effective until the product is registered with Mercury Marine. The warranty registration process is not related in any way to the process of obtaining a license, title, or registration from state boating authorities.

There are multiple methods of registration depending on the region:

- Registration in the US and Canada can be completed through the Mercury Marine website at https://www.mercurymarine.com/us/en/parts-and-service/outboard-registration.
- Registration can be completed through the Mercury Marine App.
  a. For Android™ devices- Navigate to the Google Play App Store™.
  b. For iOS™ devices - Navigate to the Apple AppStore™.
- Depending on the geographical region of the purchase, registration can be completed by the selling dealer, distributor, or retailer.

Recording Serial Numbers

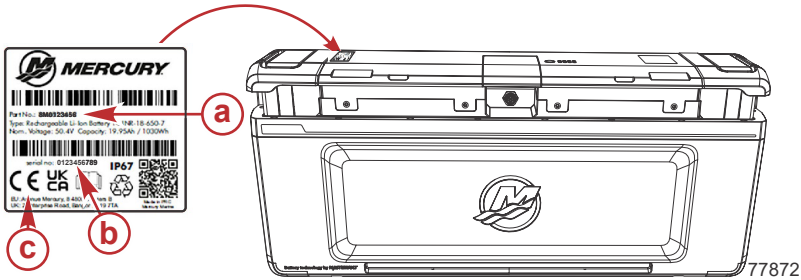
Outboard Serial Number

Record the outboard serial number for future reference. The outboard serial number is located on the outboard as shown.

75e/110e serial number location

Battery Serial Numbers

Record the battery serial numbers for future reference. The battery serial number is located on the battery as shown.



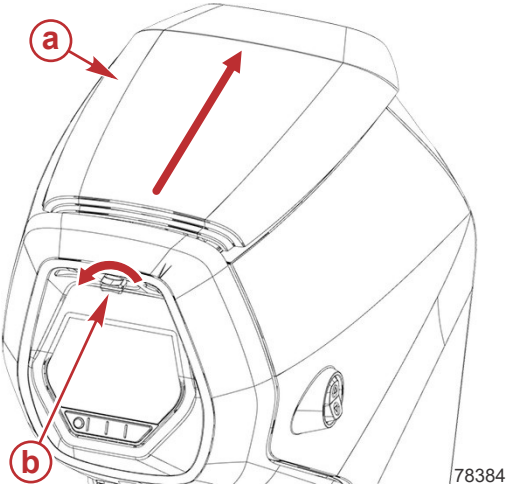
- **a -** Model designation
- **b -** Serial number
- **c -** Certified Europe Insignia (as applicable)

Hood Operation

Opening the Hood

1. Push and turn the slotted hood lock at the front of the outboard 90 degrees in the counterclockwise direction. Release the slotted hood lock, it will be protruded beyond the front of the outboard.
2. Slide the hood to the aft direction until it stops.

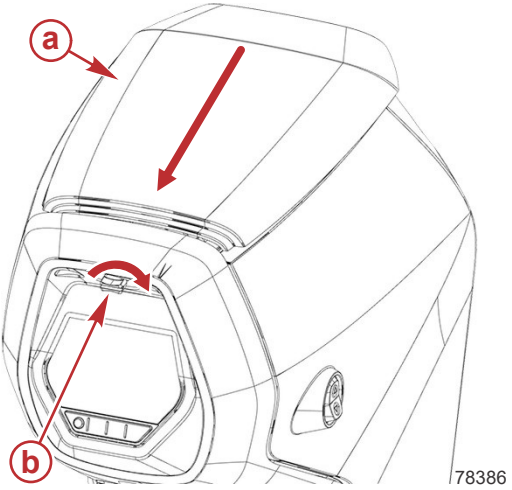
3. Lift the hood up and away.



a - Hood
b - Slotted hood lock

Closing the Hood

1. Place the hood on the outboard as shown.
2. Push forward on the hood until it stops.
3. Push and turn the slotted hood lock at the front of the outboard 90 degrees in the clockwise direction.
4. Release the slotted hood lock, it should stay recessed in its locked position.



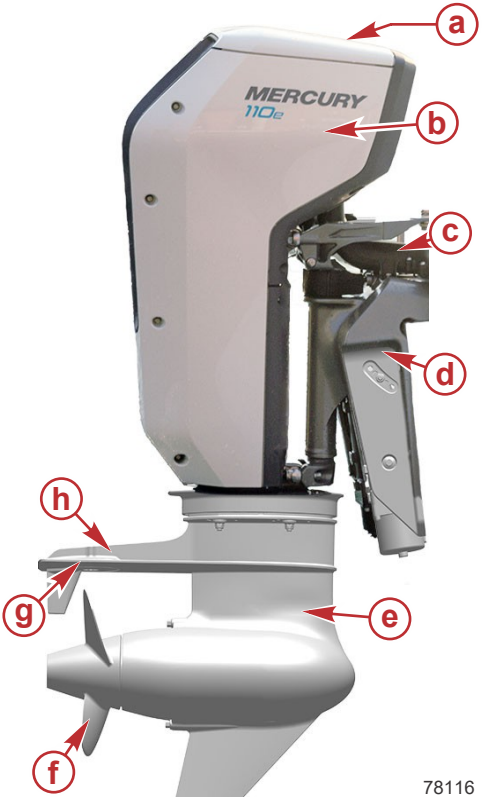
a - Hood
b - Slotted hood lock

Tiller Handle Extensions

Avator tiller model outboards are not compatible with any tiller handle extensions. Do not use Avator tiller model outboards with devices designed to extend the reach of the tiller handle throttle grip.

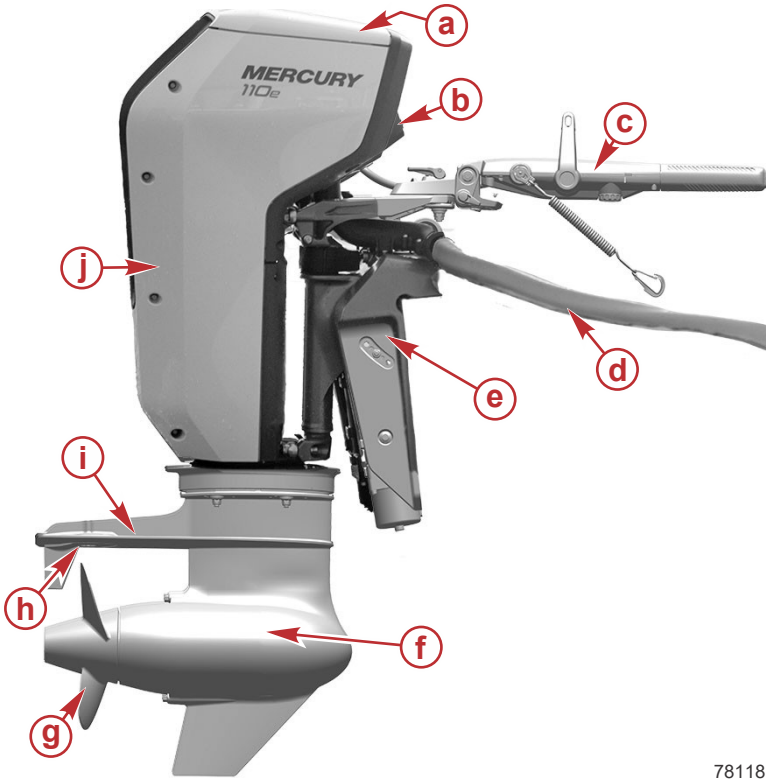
Component Identification

Remote Control Model



a - Hood
b - Cowl
c - Power cable rigging conduit
d - Transom assembly
e - Motor lower unit
f - Propeller
g - Anode
h - Anti-ventilation plate

Tiller Model



a - Hood
b - Display
c - Tiller
d - Power cables (inside of rigging sleeve)
e - Transom assembly
f - Motor lower unit
g - Propeller
h - Anode
i - Anti-ventilation plate
j - Cowl

Specifications

Outboard

Parameter			Specification
Outboard power rating		75e	7.5 kW
		110e	11 kW
Weight	75e tiller, L	With cables	64.2 kg (141.5 lb)
		Without cables	58.5 kg (129 lb)
	75e tiller, XL	With cables	65.5 kg (144.5 lb)
		Without cables	59.9 kg (132 lb)
	75e remote control, S	With cables	60.8 kg (134 lb)
		Without cables	54.4 kg (120 lb)
	75e/110e remote control, L	With cables	62.4 kg (137.5 lb)
		Without cables	56 kg (123.5 lb)
	75e/110e remote control, XL	With cables	64.6 kg (142.5 lb)
		Without cables	58.3 kg (128.5 lb)
Shaft length		Standard	38.1 cm (15 in.)
		L	50.8 cm (20 in.)
		XL	63.5 cm (25 in.)
Maximum propeller speed range		75e	1800-2000 RPM
		110e	2000-2200 RPM
Propeller pitch options **Do not use aftermarket propellers with this product, as damage may result.**			8 in. 9 in. 10.5 in.
Tilt type			Power tilt

Battery

Parameter	Specification
Weight	42.5 kg (93.7 lb)
Mount type	Remote-mounted
Rating	5376 Wh
Maximum continuous discharge current	105 A
Nominal voltage	51.2 VDC
IP rating	IP67
Chemistry	Lithium iron phosphate (LFP)

BATTERY

Minimum and Maximum of 5400 Wh Batteries per Model

Motor model	Minimum required	Maximum allowed
Avator 75e/110e	2	4

Battery Safety Information

IMPORTANT: Save these instructions.

Safety Instructions

- Read these safety instructions as well as the safety instructions, operation instructions, and specifications stated in this manual before using the Mercury Avator outboard or battery.
- Failure to observe these instructions may result in electrical shock, fire, or serious injury.
- Keep these safety instructions in a secure place for future reference.
- Non-compliance with the safety instructions, operation instructions, and specifications; repairs made with other than original parts; or repairs made without authorization will void the Mercury Marine Limited Warranty for the battery.
- Do not open or attempt to service the Mercury Avator outboard battery. Work on the Mercury Avator outboard motor or battery must be carried out by a Mercury Marine Authorized Dealer for warranty coverage to apply.
- Only use the Mercury Avator outboard motor or battery if it is complete and in good serviceable condition.
- Keep the Mercury Avator outboard motor or battery away from children.
- Protect the Mercury Avator battery against heat and fire.
- Do not store or operate the Mercury Avator battery in the presence of flammable vapors or in flammable dust environments.
- Do not submerge the Mercury Avator battery in water.
- Remove shore power from the boat to disconnect power from the charger or disconnect the charger's corded plug (if equipped) from the GFCI 110-240 VAC outlet before performing inspections, assembly, maintenance, and repair activities.
- Do not short-circuit the electrical contacts of the Mercury Avator battery, as this may result in fire, burns, explosion, or release of toxic gas. Keep the Mercury Avator battery away from objects that may cause short circuits, such as tools, screws, nails, watches, bracelets, necklaces, keys, or other metal objects.
- The Mercury Avator battery may generate heat during charging. If removed from the boat, before charging, the Mercury Avator battery must be placed on a fireproof surface, in a dry and well-ventilated environment.

- Never charge a Mercury Avator battery:
  a. In the vicinity of flammable materials.
  b. With a charger other than the one specifically designated for the Mercury Avator battery.
  c. If the battery indicates a permanent fault. (Refer to **5400 Wh Battery Faults**).
  d. That is damaged, frozen, or overcharged.
- Handle the Mercury Avator battery with care. Do not crush the Mercury Avator battery or subject it to mechanical shock.
- Only use the provided handles to carry the Mercury Avator battery.
- Use the original packaging or equivalent for transportation of the Mercury Avator battery. When transported, it must be placed in the upright position.

The voltage range (35 V – 58.5 V) is greater than may be expected from other battery types such as lead-acid batteries. Even when thought to be discharged or turned off, the Mercury Avator battery and connections can still have hazardous voltage levels.

⚠ CAUTION

Leaking electrolytes or gases from a damaged battery can cause injury to the skin, eyes, and respiratory system. Avoid contact with skin and eyes. Never inhale gases directly.

⚠ CAUTION

Electrical shock and severe injury can result from contact with uninsulated or damaged parts, wiring, or electrical connections.

- **Avoid touching the electrical contacts.**
- **Never attempt any battery repair work.**
- **Never touch chaffed, damaged, or severed wiring or obviously defective components.**
- **Prevent chaffing, rubbing, or abrading to the batteries, wiring, and cables.**

First Aid

Refer to the Material Safety Data Sheet for lithium-ion batteries, which is available on http://legacy.mercurymarine.com/media/mercury/msds_docs/8M6011591.pdf.

- In case of fire, use fire-extinguishing powder, water, or sand to extinguish the fire.

BATTERY

- The Mercury Avator battery contains hazardous materials, which are sealed safely inside. If the Mercury Avator battery is used incorrectly, toxic liquids may leak, or gases may be released. Do not touch or ingest any of the released materials or inhale released fumes. Should inhalation, skin contact, eye contact, or swallowing occur, take the necessary first-aid measures immediately. Seek qualified emergency assistance.

Inhalation	Get the individual into fresh air as soon as possible and let them rest. Consult a physician immediately.
Skin contact	Remove contaminated clothing (and shoes) as quickly as possible. Rinse skin with plenty of water. Consult a physician immediately.
Eye contact	Rinse with plenty of water. Keep eyelids open for approximately 15 minutes. Remove contact lenses if possible. Continue rinsing or applying eye drops if possible. Consult a physician immediately.
Swallowing	If conscious, get the individual to rinse their mouth out with water and spit it out. DO NOT stimulate vomiting. If the individual is vomiting, keep their head down to prevent vomit from entering the lungs. Consult a physician immediately.

Correct Disposal of This Product

This product is designed and manufactured with high quality materials and components, many of which can be recycled and reused. Be informed about the local separate collection system for electrical and electronic products. Act according to the local rules and do not dispose of old product with normal household waste. The correct disposal of old product will help prevent potential negative consequences to the environment and human health.

Battery Disposal and Recycling

For battery disposal under warranty, contact a Mercury Marine Authorized Dealer to process the disposal through Mercury's disposal process, or be directed to dispose of it locally in accordance with regional regulations. For batteries that are being submitted for warranty through MercNET, a battery report must be generated using CDS G3. For battery disposal outside of warranty, use the following table for direction.

Battery Disposal and Recycling Information	
Area	**Contact**
Contiguous United States and Canada	Customers contact Mercury Marine Technical Service at (920) 929-5040, or the local Mercury Marine Authorized Dealer to see if local services are available. Boatbuilders disposing of batteries outside of warranty, contact Mercury Marine Sales at (920) 929-5838. Dealers or distributors, call (800) 962-0927.
Europe	Mercury Marine EMEA Dealer Locator: https://www.mercurymarine.com/eu/en/find-a-dealer/
	Brunswick Marine in EMEA, LLC Avenue Mercury 8 B-4800 Verviers, Belgium Telephone: +32 87 32 32 11
All other areas	The local government administration or recycling facility for proper disposal/recycling procedures for the specific chemistry, size, and type of the Avator battery.

Battery Management System

A battery management system (BMS) monitors battery parameters such as temperature and state of charge (SOC). Integral to the battery, the BMS monitors the battery at all times - during operation, storage, and charging. During operation of the Avator outboard, if the BMS detects an unsafe condition such as elevated battery temperature, the BMS will use the Guardian system to notify the operator through the display. An audible horn and a reduction of available power will result. If temperatures continue to climb and reach the critical over-temperature limit, the BMS will shut down the battery. If all batteries in a multiple-battery installation shut down, this will render the motor, display, and any motor-sourced 12-volt component unusable. If this occurs, attempt to cool them down by shielding them from the sunlight. If possible, move the boat into an area within the range of recommended operating temperatures.

If the battery core temperature exceeds the critical limits during charging, the BMS will shut down the battery to prevent it from charging further and to provide the battery time to cool down. Once the battery has cooled, the BMS will resume charging the battery.

If the battery core temperature goes below 0 °C (32 °F) while charging, the heating element inside the 5400 Wh battery will automatically activate to keep the temperature of the battery above 0 °C (32 °F).

Battery Installation, Power Center Installation, Power Disconnect Switch, and Fuse Housing Mounting

Refer to the **5400 Wh Battery Installation and Operation Manual** for battery installation, Power Center installation, power disconnect switch, fuse housing mounting, and mounting of the 5400 Wh battery.

⚠ CAUTION

Contact with electrical terminals of the battery will result in injuries from electrocution or arc-flash. Do not remove outboard cowl panels, battery terminal covers, or the Power Center cover. These areas contain open contacts and are restricted to trained installers or technicians.

IMPORTANT: Do not attempt to service any portion of the electrical system of the boat. All individuals performing outboard electrical service, or removal of batteries must be trained on Avator outboard electrical service.

IMPORTANT: Avator power circuits are isolated DC. Do not connect the power cable negative, or the negative 12-volt power of the Avator outboard to the boat auxiliary DC negative, or the bonding/grounding bus on the boat.

Before operating this product, Mercury Marine strongly advises that any operator of an Avator 75e/110e outboard completely read and understand both the **5400 Wh Battery Installation and Operation Manual** and the **Avator 75e/110e Electric Outboard Operation and Maintenance Manual.**

Battery Storage Preparation

Outboard and battery storage preparation is important:

- To protect the battery from discharge during the storage period.
- To prevent the battery from going beyond the temperature ranges. Refer to **Battery Storage, Usage, and Charging Temperature Ranges**.
- To verify that the storage area does not expose the battery or outboard to moisture.

The following storage procedures should be followed to prepare the outboard for prolonged storage (30 days or longer).

IMPORTANT: Extended storage periods of one year or longer without using the battery will result in a permanent loss of capacity of the battery.

During any period of storage, the battery must maintain a state of charge (SOC) above 20 percent. If the battery is stored at a depleted SOC for a period of 30 days, this is detrimental to the battery and is considered abusive.

- For periods of storage less than six months - fully charge the battery prior to placing it in storage.
- For periods of storage beyond six months - fully charge the battery prior to placing it in storage and every six months thereafter.
- Store the battery in a dry, well ventilated space away from flammables.

- It is preferable to leave the battery charger connected to a GFCI 110-240 VAC outlet during storage. The Avator Battery Chargers are designed with a float feature that will maintain the charge level of the battery during periods of storage.

There are two methods for providing 110-240 VAC to the battery charger during out-of-the-water periods of boat storage. The choice of these depends on the battery charger's connection method to the AC system of the boat.

- If the battery charger has a three prong connector attached to the battery charger's cord:
  a. With the boat out of the water, connect the charger's three prong outlet to a powered, grounded GFCI 110-240 VAC outlet.
- If the battery charger has been hard-wired to the AC electrical system of the boat:
  a. With the boat out of the water use an adapter from the locking shore power connection on the boat to a 110-240 VAC outlet.

5400 Wh Battery Maintenance and Storage

1. Always charge the battery to a fully charged state before placing the boat or battery in storage.
2. If the boat or battery will be placed in storage longer than six months, fully charge the battery every six months.
3. Never attempt to charge a visually damaged battery.
4. Never attempt to charge a swollen battery, a battery that is venting smoke or foul smelling vapors, or a battery that feels hot to the touch.
5. If the battery displays a permanent error based on the battery LED indicators, refer to **5400 Wh Battery Faults**. Contact the local service center and do not attempt to charge the battery.
6. Do not store or charge the battery next to flammable materials or liquids or inside automotive vehicles.

Battery Storage, Usage, and Charging Temperature Ranges

Battery Temperature Ranges		
Charging temperature range		-20 to 45 °C (-4 to 113 °F) See note below
Operating temperature range		-20 to 60 °C (-4 to 140 °F)
Battery storage temperature ranges	0-30 days	-20 to 45 °C (-4 to 113 °F)
	Beyond 30 days	0 to 35 °C (32 to 95 °F)

NOTE: *The 5400 Wh battery contains an internal heating element that will keep the core temperature of the battery above 0 °C (32 °F) during charging.*

Storing the battery above or below the temperature limits and intervals stated above will result in permanent reduced performance and range of the battery.

IMPORTANT: As storage periods increase in length, the temperature range of storage specification is narrowed. If temperatures are exceeded for the times shown, battery capacity will be reduced. Battery damage from improper storage is not covered under the Mercury Marine Limited Warranty for the battery.

Battery Disconnection and Removal

If the boat cannot be stored within the recommended temperature ranges, the batteries can be removed from the boat to be stored in an area that meets the recommended temperature ranges.

⚠ CAUTION

Contact with electrical terminals of the battery will result in injuries from electrocution or arc-flash. Do not remove outboard cowl panels, battery terminal covers, or the Power Center cover. These areas contain open contacts and are restricted to trained installers or technicians.

IMPORTANT: Do not attempt to service the electrical system of the boat. All individuals performing outboard or electrical service, including removal of batteries must be trained on Avator outboard electrical service.

Mercury Marine strongly advises that only a certified and trained technician or installer perform battery removal from the boat.

For battery disconnection and removal instructions refer to the **5400 Wh Battery Installation and Operation Manual**.

Battery Storage

During periods of storage:

- Batteries that are being charged by the Avator battery charger, ensure that the batteries are on. Refer to **Powering the Batteries ON**.
- Batteries that are not being charged during storage, ensure that the batteries are off. Refer to **Powering the Batteries OFF**.
- Storage temperatures exceeding 60 °C (140 °F) will void the battery's limited warranty.
- Allowing the battery to deplete to a 0% state of charge during storage for 30 consecutive days will void the battery's limited warranty.
- Review the **Battery Safety Information** before storing the battery.

Storing the Batteries - Removed From the Boat

NOTICE

Damage can result to a battery exposed to temperatures above 60 °C (140 °F). Always keep the battery away from heat sources. Do not store flammable objects near the battery.

If storing the batteries removed from the boat, refer to **Battery Disconnection and Removal** and **Battery Storage, Usage, and Charging Temperature Ranges**

Batteries removed from the boat should be:

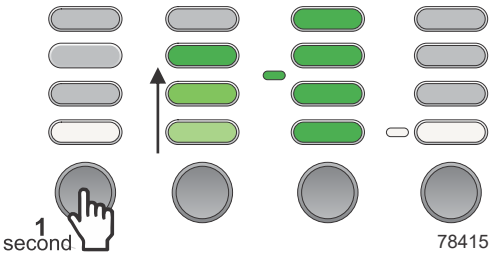
- In a temperature stable room, between 0 °C and 25 °C (32 °F and 77 °F).
- Away from direct heat sources.
- Well ventilated and dry.
- Away from all combustible materials, including wood, plastic, carpet, and gasoline.
- Near a Class ABC fire extinguisher.
- On a ceramic or concrete surface.

Battery LED Status

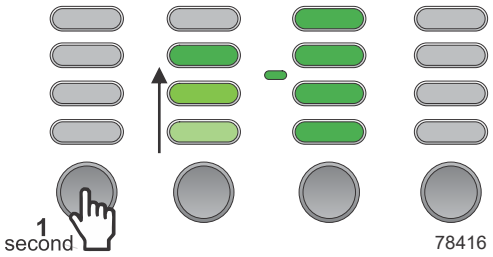
5400 Battery System Power Status Indication

The LED will show the power status of the battery.

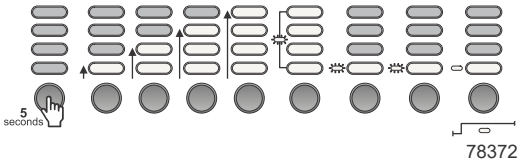
1. If the battery is powered on, and has no faults, the first LED will display as solid white. A one-second button push will display the charge level in green LEDs, and return to the solid white bottom LED.



2. If the battery is powered off, the LEDs will all be off. A one-second button push will display the charge level in green LEDs, and return to the off bottom LED.

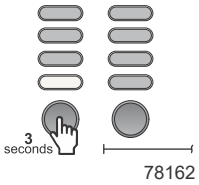


3. To power the batteries on, refer to **Powering the Batteries ON**.



NOTE: *If the batteries remain on for a period of time during a period of time during which the outboard has not been powered up and the batteries are not being charged, the batteries will switch to an off state to preserve State of Charge (SOC).*

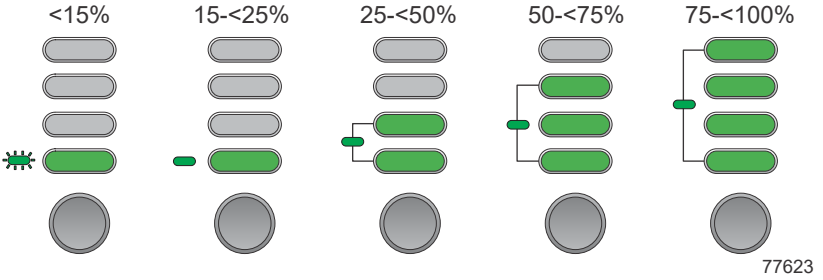
4. To power the batteries off, refer to **Powering the Batteries OFF**.



BATTERY

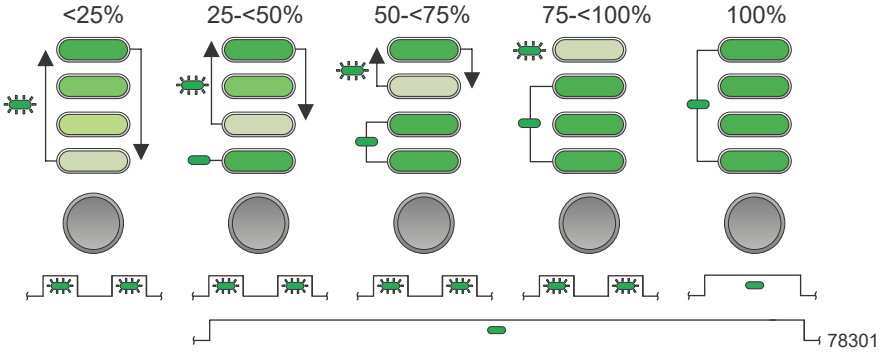
5400 Wh Battery State of Charge (SOC) Status

Pressing the button on the battery for one second and then releasing will result in a temporary display of battery charge status for that battery only. This occurs with the battery in either the on or off state. The charge level status check does not affect the power state of the battery. A State of Charge (SOC) below 15% will display a blinking green LED. As the SOC increases through greater percentage levels, the green LEDs will display as solid lit segments.



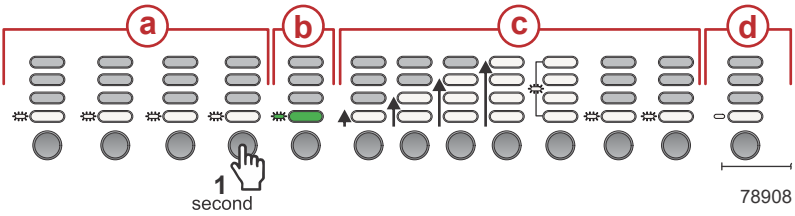
Battery Charging Status

During charging the battery LEDs will display the level of charge. When a determined level of charge is met, the corresponding lights will remain illuminated solid. The remaining LED level lights will cycle in an upward progression. When charging has reached 100 percent, all of the lights will display as solid.



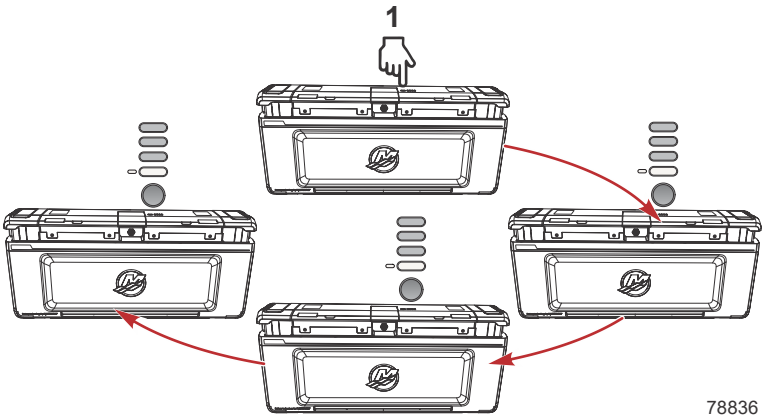
Battery Standby Mode

If the battery SOC is less than 30%, after 9 hours of not using the battery or being charged, the battery will go into standby mode. Standby mode is indicated by a single flashing white LED on the battery or batteries. To exit standby mode push a button on any battery and all connected batteries will exit standby mode and go into the on state. Verify the on state by viewing the battery LEDs for the on status solid white indication.



Taking batteries out of standby mode

- **a -** Battery in standby mode LED status, with power button push
- **b -** Battery SOC LED status
- **c -** Battery powering on sequence
- **d -** Battery on single white LED status

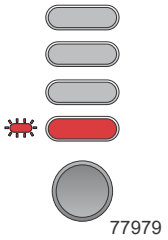
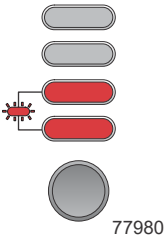
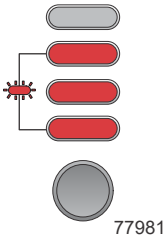


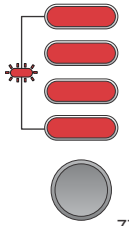
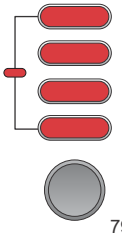
All batteries to on status with one button push

5400 Wh Battery Faults

The following table shows the LED color and status when a battery fault is active.

BATTERY

Fault	Action
Low SOC – Empty battery  77979 **Blinking LED**	Battery voltage is critically low. If the condition is not resolved by charging, contact a Mercury Marine Authorized Dealer for service.
Over or under temperature  77980 **Blinking LEDs**	The battery core temperature is either above or below the limits. Move the battery to a -15 to 45 °C (5 to 113 °F) temperature location. Check the battery after 48 hours of temperature controlled storage. If the condition is not resolved, contact a Mercury Marine Authorized Dealer for service.
Overcurrent/short circuit  77981 **Blinking LEDs**	The battery is experiencing a fault related to a short circuit, or has an overcurrent condition. Contact a Mercury Marine Authorized Dealer for service.

Fault	Action
Over charged/over voltage  77982 **Blinking LEDs**	The battery is over charged or over voltage. Disconnect the battery charger. Reduce the battery voltage by either using the boat or allow the voltage to reduce over time.
Permanent error  79036 **Solid LEDs**	Contact a Mercury Marine authorized dealer for service. Do not attempt to use or charge the battery.

5400 Wh Charging Batteries in the Boat on the Water

IMPORTANT: Use only approved locking shore power inlets and vessels wired for shore power when charging on the water per ABYC and NFPA 70 Guidelines.

Never charge batteries with the boat in the water by using a 110-240-volt AC extension cord from an outlet on the shore.


77578

BATTERY

General Information

IMPORTANT: The external housing of the battery charger is connected internally to the AC grounding plug wiring. This requires the use of grounded outlets when using the corded (plug-in) connected battery charger. Using non-locking, standard extension cords to connect to the battery charger from the dock must only be done when the boat is out of the water. This battery charger must also be grounded to reduce the risk of electric shock. This battery charger is equipped with an electrical cord that has an equipment-grounding conductor through a grounding plug. This charger must be connected to a GFCI (Ground Fault Circuit Interrupt) outlet. This outlet must be installed and grounded in accordance with all local codes and ordinances. For the corded (plug-in) version, never alter an AC cord or the plugs provided with the charger. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician. Improper connection can result in the risk of an electric shock.

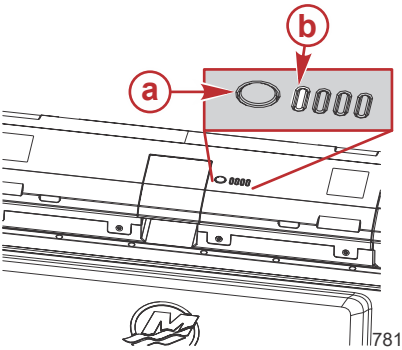
1. Keep children and pets away from the battery charger and batteries during charging events.
2. Do not use the battery charger until you have read and understand the operational instructions contained in this document.
3. Do not operate a battery charger that has been: impacted, dropped, power cord modified or cut, or damaged in any other manner.
4. Before attempting any cleaning, disconnect the charger from both of the AC and DC electrical systems
   - Use a vacuum to remove dust and debris from the charger housing, vent fan, electrical contacts, and the surrounding area.
   - Use only mild soap and a damp cloth to clean the charger.
   - Never use harsh solvents for cleaning.
   - Never use flammable or combustible chemicals on or around the charger.
5. Do not open the charger. There are no serviceable parts inside. Only Mercury Marine authorized dealers or distributors may order replacement battery chargers.
6. Protect the Avator battery against heat and fire. Do no charge the Avator battery in the presence of flammable vapors or in flammable dust environments.
7. Powering the charger using a generator or power inverter is acceptable. The generator or power inverter must have a minimum rating of 1250 Watts of continuous, uninterrupted output.

Charging the Batteries

1. Turn the outboard off.
2. Turn the power disconnect switch to the **OFF** position..
3. Ensure that all batteries are on.

- If not, press and hold the battery power button for five seconds. Refer to **Powering the Batteries ON**.

NOTE: *The power on pattern will display and the first LED will remain lit in a solid white color.*



a - Battery power button
b - LED

IMPORTANT: For on-water charging, Do not connect the charger's 3-prong grounded plug to any outlet on the shore. Do not charge the batteries with a household extension cord while the boat is on the water.

4. For cord connected chargers, connect the charger to an on-board permanently installed 110-240-volt AC GFCI (ground fault circuit interrupt) electrical outlet.
5. Connect a locking shore power cable to the boat first, then to the shore power pedestal.
6. Enable power on the shore power pedestal.
7. Enable the AC power to the charger.
8. Verify that the lights on the battery charger(s) and each battery indicate successful charging with no faults.

Stopping the Batteries from Charging

1. Disable the shore power on the pedestal.
2. Disconnect the shore power cord, first from the pedestal and then from the boat.
3. For cord connected chargers, remove the AC power from the charger, or disconnect the charger from the on board AC outlet before attempting to power the outboard on.
4. The outboard is ready to be powered on.

5400 Wh Battery Charging—Boat Removed From the Water

IMPORTANT: Before using the boat or placing it in storage, fully charge all of the batteries.

NOTE: *For batteries or Avator propulsion systems in boats being placed in storage, consider the storage time durations and ambient temperatures that the battery will be exposed to during the storage period. Refer to the* ***Specifications*** *section for specific recommendations regarding charging during storage periods.*

1. Power off the outboard:
   - For tiller models—Press and hold the power button on the display until the animation stops and the screen goes blank.
   - For remote control models—Turn the key off.
2. Turn the battery disconnect switch to the **OFF** position.
3. Turn each battery on by pressing and holding the battery's power button for five seconds. Refer to **Powering the Batteries ON**.
4. Connect the Avator battery charger's input cable to a 110-240 VAC GFCI outlet. For chargers that are permanently connected to the AC system of the boat, use an adapter between the 110-240 VAC GFCI outlet and the boat-mounted, locking shore power connector.

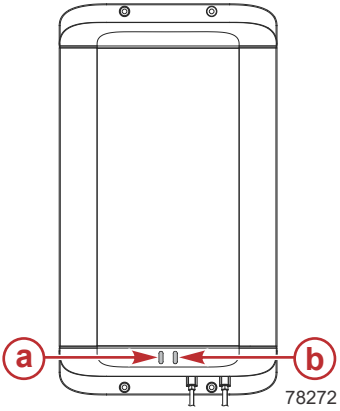
IMPORTANT: If an extension cord is used, the minimum rating of the cord must be 20 amps.

   The 1050 watt battery charger can use 15 amps AC or more when charging more than one Avator 5400 Wh battery. Connecting one or two boat-mounted 1050 watt battery chargers to any land based AC GFCI outlet may exceed the circuit capacity of that AC system. Contact a certified electrician to assist with circuit changes as required, before attempting to connect the charger to an outlet of a residence or any land-based outlet.

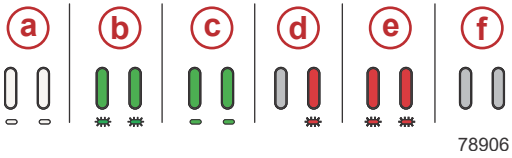
5. Use the LEDs on each battery connected to the Power Center as well as the LEDs on the battery charger to ensure that each battery is being charged. Refer to **Battery LED Status**.

Charger LED Status

While charging, monitor the LED status on the battery charger.



a - LED 1
b - LED 2



Ref	LED 1 Behavior/ Color	LED 2 Behavior/ Color	Indication
a	Solid/White	Solid/White	Initializing. This is the starting status of the battery charger
b	Blinking/Green	Blinking/Green	Connected to the battery - charging
c	Solid/Green	Solid/Green	Connected to the battery - maintaining charge (float)
d	Off/None	Blinking/Red	100% charged, or no battery detected
e	Blinking/Red	Blinking/Red	Battery charger faulted
f	Off/None	Off/None	Not connected to the AC wall plug

Resolving LED Conditions

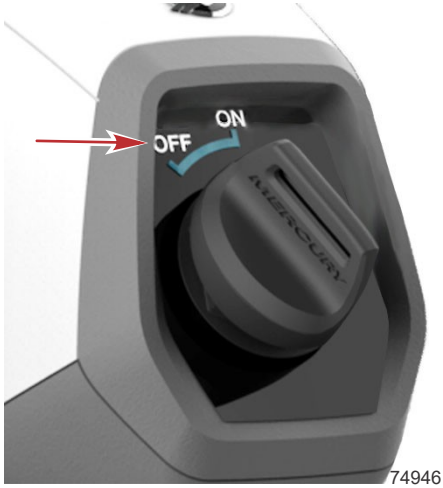
LED Condition	Action to Resolve
Both LEDs are solid white	After connecting the charger to AC power, wait 60 seconds to see change in color to indicate charging or faulted status.
Both LEDs are off	Check AC cord connection. Ensure there is power to the plug.
Blinking red (LED 2)	Check the connections between the charger and battery. Check for battery faults. Battery may be too hot or too cold. Battery voltage may be too low or too high to charge. For 100% SOC batteries, discharge the battery to a level below 100% and attempt to charge again. If the condition continues, contact a Mercury Marine Authorized Dealer for service.
Blinking red (LED 1)	Check the connections between the charger and the battery or batteries. For charging through the Power Center, ensure that the power switch is in the **ON** position.
Blinking red (LED 1 and 2)	The battery charger is faulted. Disconnect from the wall plug and the battery or batteries, and contact a Mercury Marine Authorized Dealer.

Powering the Batteries ON

IMPORTANT: Before powering the batteries on or off, ensure that the outboard is off and the power disconnect switch is turned to OFF. Outboard or component damage can result from turning the batteries on or off while the outboard or power disconnect switch is on.

BATTERY

1. Ensure that the key on the remote control at the helm (if equipped) is off.



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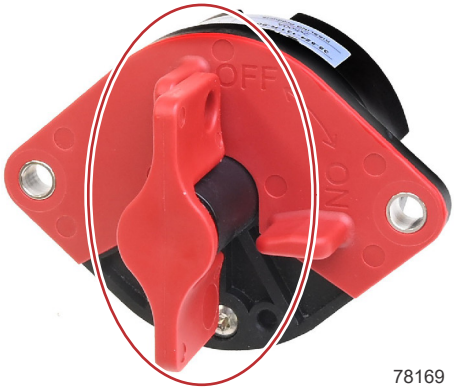
2. Ensure the power disconnect switch is in the **OFF** position.



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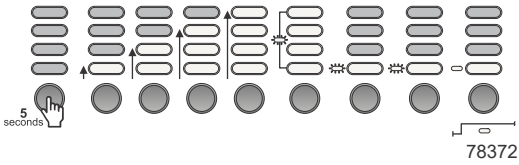
3. Locate the power/status button on the battery.
4. Press and hold the power/status button on the battery for five seconds until the power on LED sequence pattern starts.



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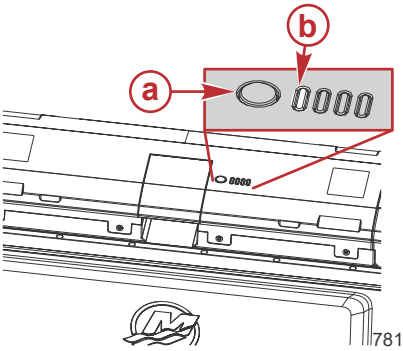
5. Release the power/status button.

6. Ensure that the battery is on by observing the white LED battery on indication.



a - Power/status button
b - White LED

7. Repeat steps **3** through **6** for each battery installed on the boat.
8. Turn the power disconnect switch to the **ON** position.

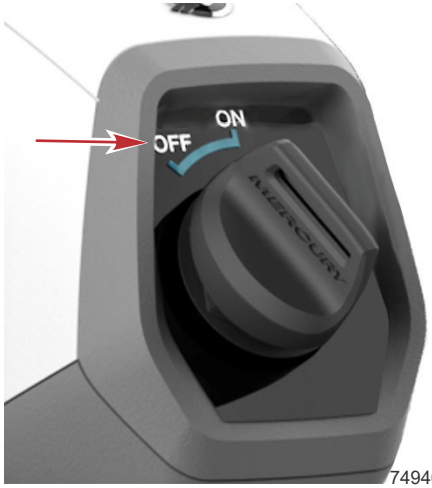
NOTE: *The outboard is ready to be powered on.*

Powering the Batteries OFF

IMPORTANT: Before powering the batteries on or off, ensure the outboard is off and the power disconnect switch is turned to the OFF position. Outboard or component damage can result from turning the batteries on or off while the outboard or power disconnect switch is on.

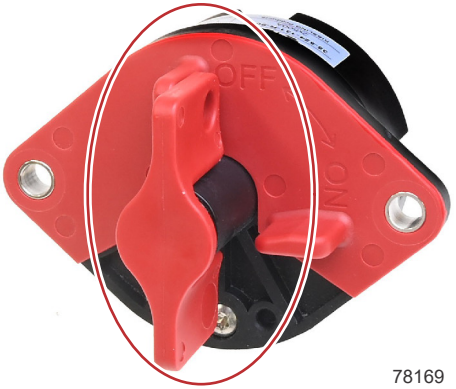
1. Ensure that the outboard is off.

- Remote control models - Ensure that the key on the remote control at the helm is in the **OFF** position.



- Tiller models - Ensure that the outboard is off by viewing the display.

2. Ensure that the power disconnect switch is in the **OFF** position.

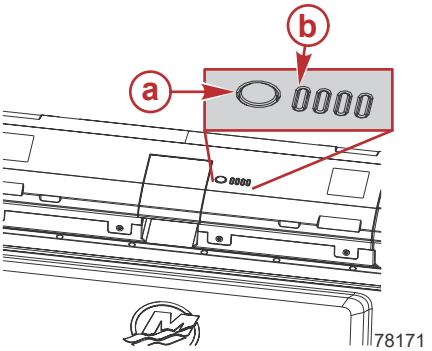


3. Locate the power/status button on the battery.
4. Press and hold the power/status button on the battery for three seconds until the LEDs are off.
5. Release the power/status button.

IMPORTANT: A single battery state of off by indication does not indicate absence of voltage at any exposed terminal or component.

The power cables at each battery stay energized until all of the batteries are turned off and residual voltages have been allowed to drain.

6. Ensure that the battery is off by observing the white LED battery off indication.

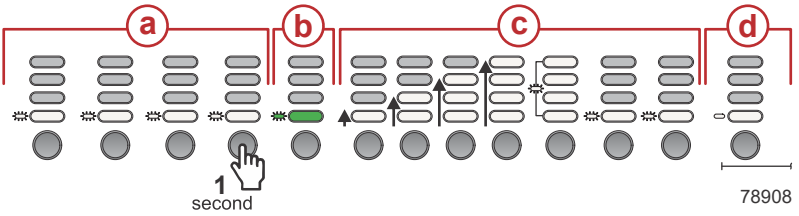


a - Power/status button
b - LEDs off

7. Repeat the preceding steps for each battery installed on the boat.

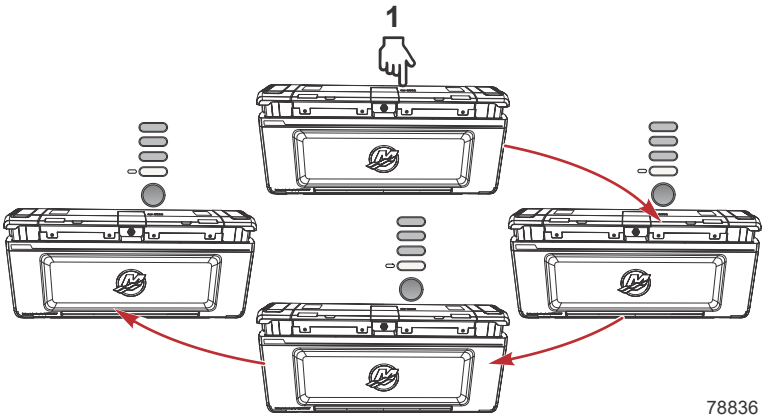
Battery Standby Mode

If the battery SOC is less than 30%, after 9 hours of not using the battery or being charged, the battery will go into standby mode. Standby mode is indicated by a single flashing white LED on the battery or batteries. To exit standby mode push a button on any battery and all connected batteries will exit standby mode and go into the on state. Verify the on state by viewing the battery LEDs for the on status solid white indication.



Taking batteries out of standby mode

a - Battery in standby mode LED status, with power button push
b - Battery SOC LED status
c - Battery powering on sequence
d - Battery on single white LED status



All batteries to on status with one button push

BATTERY

Notes:

Mercury Marine Validated Outboard Mounting Hardware

IMPORTANT: Do not mount any accessory—such as Tow Sport bars or boarding ladders—onto the boat using the mounting hardware included with the outboard. Installing other products onto the boat by using the outboard mounting hardware will compromise the ability of that hardware to properly and safely secure the outboard to the transom.

Improper installation of the outboard can cause performance and reliability issues that can lead to safety concerns. Follow all instructions relating to outboard installation.

Mercury Marine provides validated fasteners and installation instructions, including torque specifications, with all outboards so they can be properly secured to boat transoms.

Outboards that require validated mounting hardware will have the following decal on the transom clamp.

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Outboard Installation

⚠ WARNING

Failure to correctly fasten the outboard could result in the outboard propelling off the boat transom resulting in property damage, serious injury, or death. Before operation, the outboard must be correctly installed with the required mounting hardware.

For detailed outboard installation instructions, refer to the **75e/110e Installation Manual**.

For detailed instructions for installing and connecting the batteries, refer to the **5400 Wh Battery Installation and Operation Manual**.

Description	Nm	lb-in.	lb-ft
Outboard fasteners	13.6	120	10

Connecting Accessories to the Outboard

IMPORTANT: Avator power circuits are isolated DC. Do not connect the power cable negative, or the negative 12-volt power of the Avator outboard to the boat auxiliary DC negative, or the bonding/grounding bus on the boat.

Connecting aftermarket accessories or electrical loads to the Avator 12-volt or 48-volt systems can result in damages to components or batteries. With the exception of NMEA (R) BUS power, SmartCraft Connect (SCC), Avator display, remote control, and depth transducer, any accessories require approval by Mercury Marine product application engineering.

Genuine Avator accessories have been specifically designed and tested for Mercury Avator outboards. These accessories are available from Mercury Marine dealers, distributors and may be available directly from Mercury Marine. Make sure to download the Mercury Marine app to an Apple® or Android® device for specials, discounts, and rebates regarding all Avator accessories.

IMPORTANT: Check with the local dealer before installing accessories. The misuse of approved accessories or the use of unapproved accessories can damage the product.

Some accessories not manufactured or sold by Mercury Marine are not designed to be safely used with the Avator outboard or Avator outboard operating system. Acquire and read the installation and operation manuals for all selected accessories.

Aquatic Invasive Species (AIS)

STOP AQUATIC HITCHHIKERS!™
Be A Good Steward. Clean. Drain. Dry.

For additional information, visit StopAquaticHitchhikers.org.

About AIS

AIS and their spread can detrimentally impact the boating experience and the future of the boating lifestyle. Reducing the spread of AIS has led to significant national efforts to inspect boats moving between water bodies or across state and federal boundaries and could lead to delayed or denied access if AIS are suspected or found on board.

AIS include plant life such as Eurasian watermilfoil and water hyacinth, and animals such as spiny water flea, quagga, and zebra mussels. AIS may vary in size from microscopic, to easily visible to the naked eye, and can live in residual water or mud. These species damage ecosystems and negatively impact fishing by depleting natural food resources, altering the water environment, and changing the structure of the ecosystem.

The impact of AIS has already resulted in the limiting of boating access to many waterways throughout North America, the closure of public boat ramps, and the reduction of availability for fishing and boating across the United States. Many federal, state, and local agencies have enacted laws and regulations for inspections, permits, launch availability, and water access for vessels entering public waterways.

Boats and associated equipment are major contributors to the spread of AIS. Boats that have come into contact with AIS can become a means of transportation through attachment and entrapment.

Boat Cleaning and AIS

Water passes in and out of the space under the outboard's lower cowls during normal operation of the boat. When flushing and cleaning the boat to control the spread of AIS, pay attention to this space by directing flushing water into the spaces under the lower cowl.

Region-Specific Information

For more information about the control of AIS in a specific region, please contact the local area wildlife conservation office or local governmental natural resources office.

Trailering the Outboard

IMPORTANT: To avoid personal injury from accidental activation or damage to the outboard or the battery, follow all instructions before trailering or transporting the outboard. Damages to the outboard, boat, or trailer and injuries to persons resulting from trailering are excluded from coverage under the Mercury Marine Limited Warranty.

IMPORTANT: The full-up tilt position is only for static storage, with the boat in the water or on the trailer. Do not launch, retrieve, or transport the boat on the trailer with the outboard in the full-up tilt position.

Mercury Marine recommends trailering Avator 75e/110e equipped boats with an outboard support brace. Outboard support braces are not included with this product. Refer to **Trailering Using an Outboard Support Brace**.

1. **Tiller models**: To prevent damaging the tiller handle assembly from bouncing during trailering, set the tiller handle to the full upright and locked position. Refer to **Tiller Handle Tilt**.

2. For trailering the outboard without an outboard support brace (transom saver), adjust the tilt position of the outboard to a vertical operating position using:
   - Remote control models: Tilt button
   - Tiller models: Tilt button on the tiller handle
   - All models: Tilt switch on the starboard panel of the outboard
3. Turn the outboard off. Refer to **Powering Off the Outboard–Tiller Models** or **Powering Off the Outboard–Remote Control Models**.
4. **Tiller models**: Tighten the steering friction knob (copilot knob) to the tightest steering friction setting. Refer to **Copilot (Steering Friction Adjustment)**.
5. Turn the power disconnect switch to the **OFF** position.
6. Power the battery or batteries off. Refer to **Powering the Batteries OFF**.

Trailering Using an Outboard Support Brace

IMPORTANT: Always be aware of terrain and obstruction heights when trailering the boat. Only tilt the outboard high enough as required for ground clearance.

Follow all instructions included with the outboard support brace for safe trailering.

Bolt-on support braces that include a bungee strap are recommended for trailering Avator 75e/110e outboards.

1. Insert and adjust the trailering support brace between the motor lower unit and the transom assembly.

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2. Use the power tilt to lower the outboard against the support brace using:
   - Remote control models: Tilt button
   - Tiller models: Tilt button on the tiller handle
   - All models: Tilt switch on the starboard panel of the outboard

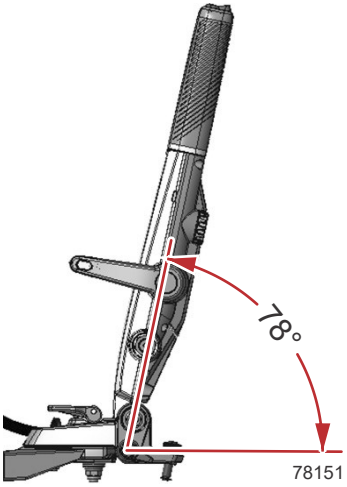
3. Turn the outboard off. Refer to **Powering Off the Outboard–Tiller Models** or **Powering Off the Outboard–Remote Control Models**.
4. Turn the power disconnect switch to the **OFF** position.
5. Power the battery or batteries off. Refer to **Powering the Batteries OFF**.
6. Secure the outboard support brace into the wedge of the support brace with a bungee strap.

Tiller Handle Features

Tiller Handle Tilt

IMPORTANT: To prevent damage, the tiller handle must be raised and locked into a 78 degree position for trailering.

Do not attempt to carry or lift the outboard by the tiller handle.



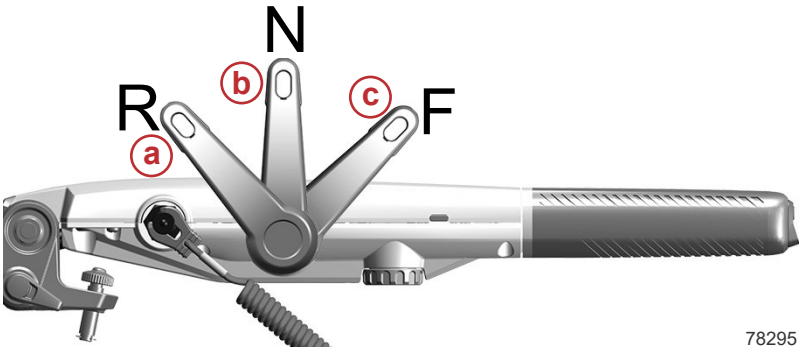
78 degree position

Tiller Shift Lever

The outboard must be on.

- Forward movement - Move the shift lever forward all the way to the forward stop.
- Neutral - Move the shift lever to a 90 degree angle relative to the tiller arm, into the neutral detent to stop all propeller rotation.

- Reverse movement - Move the shift lever direction all the way to the reverse stop.

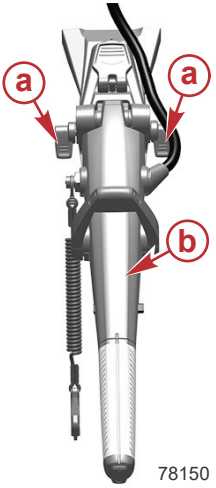


a - Reverse
b - Neutral
c - Forward

Tiller Lock Release Lever

Rotate the tiller lock release levers in the aft or forward direction to allow the tiller handle to be raised or lowered.

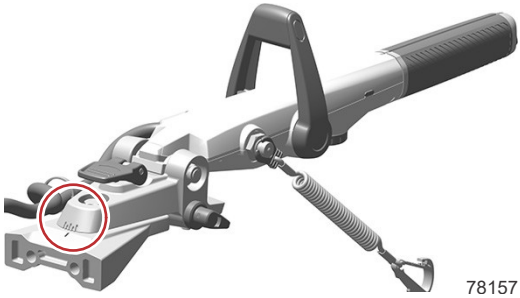
1. Lift up on the tiller handle to remove the load from the tiller lock release lever before attempting to unlock the release lever.
2. Rotate the tiller lock release levers forward to unlock the tiller.
3. Move the tiller to the desired position.
4. Rotate the tiller lock release levers aft to lock the tiller in place.



a - Tiller lock release lever
b - Tiller handle

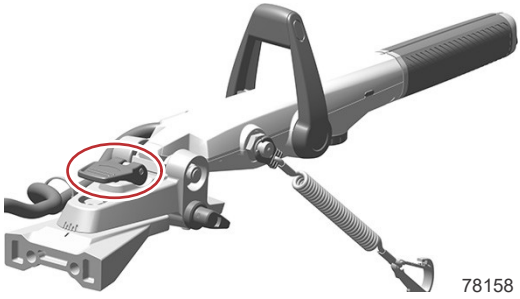
Tiller Handle Yaw

The tiller handle yaw allows the operator to change the side to side angle of the handle in small increments and lock it in for operation of the tiller with the arm positioned either left or right of center.



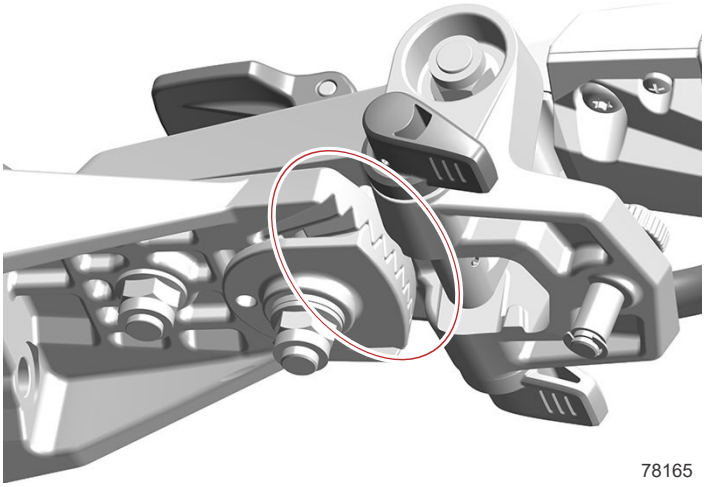
Tiller Handle Yaw Release

1. Lift up on the tiller handle yaw release lever.
2. Use one hand on the outboard to resist the motion of the outboard.
3. Adjust the position of the tiller handle, right or left.



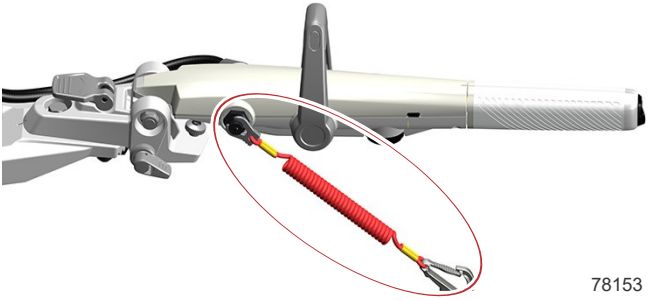
4. Push the tiller handle yaw release lever back down into the locked position.

5. Verify the lever is locked into position.



Lanyard Stop Switch

Refer to **Important Safety Information—Lanyard Stop Switch**.



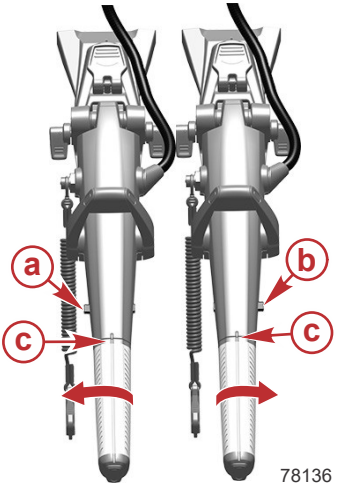
A spare clip is located underneath the outboard hood. Refer to **Spare Lanyard Stop Switch Clip**.

Throttle Rotation Slide Selector

IMPORTANT: Until the operator is familiar with the characteristics and features of this tiller handle control, it is strongly suggested to initially test-operate the boat in a safe area. Use all ranges and features of the tiller handle control in an area free of swimmers or obstructions and in water deep enough to prevent beaching.

The slide selector can be used to change the forward throttle rotation from neutral preference depending on operator preference or position in the boat.

Press the throttle rotation selector slide all the way to the left or the right until it stops.



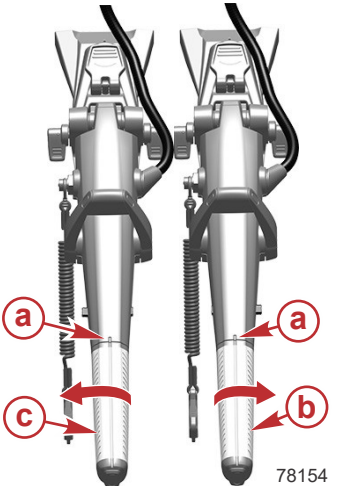
a - Throttle rotation selector slide (counterclockwise)
b - Throttle rotation slide selector (clockwise)
c - Neutral

Throttle Grip

Controls the outboard speed.

1. Align the throttle grip with the neutral detent on the tiller handle when starting or before shifting into the forward or reverse gear position.
2. Twist the throttle grip to increase the outboard speed.

NOTE: *Throttle direction configuration is dependent on operator preference. Refer to* ***Throttle Rotation Slide Selector***



a - Neutral detent
b - Throttle direction - Starboard
c - Throttle direction - Port

Throttle Friction Knob

Tiller Handle Height Adjustment Screw

With the tiller in the horizontal operating position, the height of the tiller can be adjusted in small increments.

1. Lift the tiller handle up slightly to access the tiller handle height adjustment screw.
2. Adjust the tiller handle position:
   - Lower the tiller handle - Rotate the screw clockwise.
   - Raise the tiller handle - Rotate the screw counterclockwise.

Power Tilt Switch

Adjust the tilt position. Refer to **Using the Power Tilt**.

- Lower the tilt position - Push the toggle switch up.

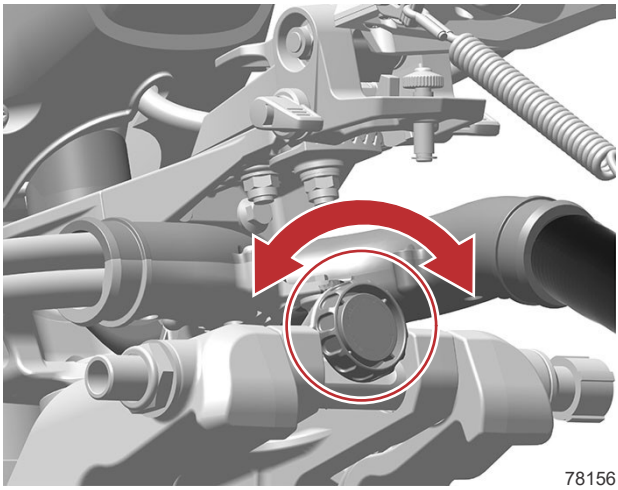
- Raise the tilt position - Push the toggle switch down.

Copilot (Steering Friction Adjustment)

The copilot knob provides a steering friction adjustment for user preference.

The copilot knob is used to help hold the tiller steering lever in place with minimal operator effort if the friction level is turned to the maximum position.

- To increase friction, turn the copilot knob clockwise.
- To decrease friction turn the copilot knob counterclockwise.



Single Outboard Avator Remote Control Features

IMPORTANT: Until the operator is familiar with these remote controls, it is strongly suggested to initially test-operate the boat in a safe area. Use all features and ranges of these remote controls in an area free of swimmers, obstructions, and in water deep enough to prevent grounding to become familiar with the characteristics and features of these controls.

- **Neutral lock bar** - Squeeze the neutral lock bar to allow the control handle to move in forward or reverse directions. When the control handle is returned to neutral, the neutral lock bar will engage again, to prevent inadvertent travel of the remote control handle.
- **Control handle** - Starting from the neutral position, squeeze the lock bar to release the control handle.
  a. **Forward outboard control** - Push the control handle forward from neutral to the first detent.
  b. **Reverse outboard control** -Push the control handle back from neutral to the first detent.

IMPORTANT: Forcing the shift mechanism out of neutral without squeezing the neutral lock bar can damage the remote control.

a - Throttle/shift lever
b - Neutral lock bar
c - Ignition key switch—**OFF**, **ON**

Dual-Handle Electronic Remote Control (ERC)—Operation and Adjustment

Operation

The electronic remote control (ERC) handle controls the shift and throttle operation. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing the handle forward to increase speed. Pull the control handle from the forward position to the neutral position to decrease speed and eventually stop. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling the handle back to increase speed in reverse.

The amount of force needed to move the handles and to move the handles through the detents is adjustable to help prevent unwanted motion.

Adjustment

NOTE: *The control handle tension and detent tension may require periodic maintenance using the adjustment screws.*

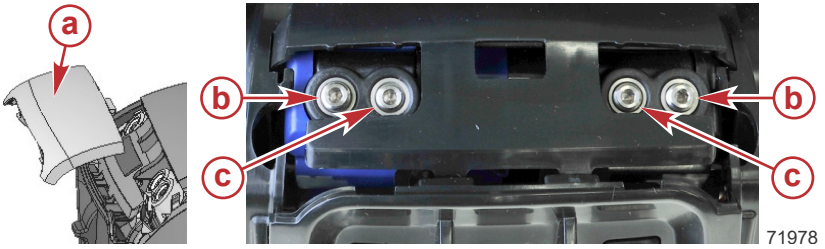
To adjust the handle detent tension:

1. Remove the rear access cover of the ERC.
2. Turn the adjustment screw clockwise to increase tension on the control handle and counterclockwise to decrease tension.
3. Adjust to the tension desired.

To adjust handle tension:

1. Remove the side cover plugs of the handle that needs adjustment.
2. Turn the adjustment screw clockwise to increase tension on the control handle and counterclockwise to decrease tension.

3. Adjust to the tension desired.



a - Access cover
b - Detent adjustment screws
c - Handle friction adjustment screws

Special Digital Throttle and Shift (DTS) Features

The dual outboard ERC system features several alternate operational modes for the electronic remote control (ERC) levers.

Description of Controls

Ref	Control/LED	Function
a	Neutral (**N**) LEDs (one on each handle)	Illuminate when the outboard is in the neutral gear position. The lights flash when the outboard is in throttle-only mode.
b	**UP ▲** and **DN ▼** —tilt control (if equipped)	Raises and lowers the outboards, at idle speeds or below, for best efficiency or for conditions such as shallow water or trailering. ***NOTE:*** *Tilt switches for the individual outboards are located on the front (bow side) of the ERC.*
c	**Enable/Disable (Power)**	This button allows or prevents the ERC from shifting or throttling. The button must be pressed after turning the key(s) on before using the ERC levers. The individual Enable/Disable buttons located on the rear of the lower portion of the ERC disable throttling or shifting of each individual outboard. To operate the ERC: Turn the key(s) on. Press enable/disable one time. The outboard is now ready to be shifted and throttled using the ERC levers.
d	Brightness (**+** and **–**)	The brightness feature adjusts the level of lighting provided by the ERC button back lights as well as the brightness of each connected display.
e	**1 LEVER**	Enables the throttle and shift functions of all outboards to be controlled by the port lever.

Ref	Control/LED	Function
f	**ENABLE/ DISABLE**	Enable/Disable buttons located on the rear of the lower portion of the ERC disable throttling or shifting of each individual outboard.

NOTE: *Not all functions may be active.*

1 Lever

This feature commands both outboards with a single lever on a dual outboard application. This feature simplifies operation during rough sea conditions by allowing the operator to use a single lever to command both outboards simultaneously. It is not the same as the system feature called Sync.

To engage 1 Lever mode:

1. Place both ERC levers in neutral.
2. Press the **1 LEVER** button. The button light will turn on.
3. Place the starboard ERC lever into gear.
4. When the handle is moved, the outboard propeller speed and gear position is synchronized.

To disengage 1 Lever mode:

1. Place both ERC levers in neutral.
2. Press the **1 LEVER** button. The button light turns off.

Adjusting Friction and Detent–Electronic Remote Control (ERC) Models

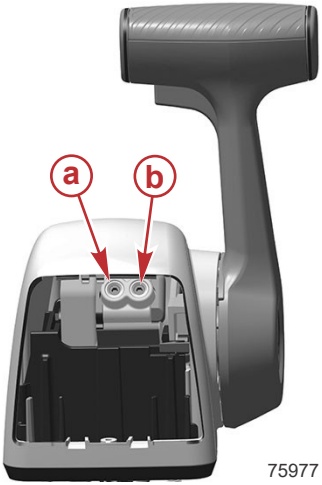
Adjusting Friction and Detent on Avator Console Mount ERC

Recommended Tools

- Small flat-blade screwdriver
- Hex wrench

1. Carefully pry the access cover from the ERC body.

2. Adjust the handle friction and detent as required with the adjustment screws on the ERC.



a - Friction adjustment screw
b - Detent adjustment screw

3. When adjustments are complete, install the back cover on the ERC.
   a. Align the hooks on the access cover to the ERC body.
   b. Slide the hooks into the ERC body.

c. Pivot the access cover downward to snap into place.

a - Hooks on the access cover
b - Slide hooks into the ERC body
c - Pivot the access cover downward to snap into place

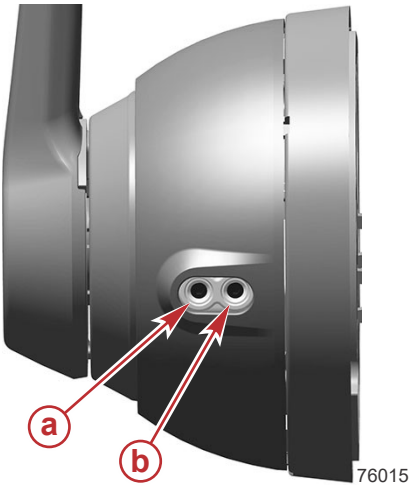
Adjusting Friction and Detent on Avator Panel Mount ERC

Recommended Tools

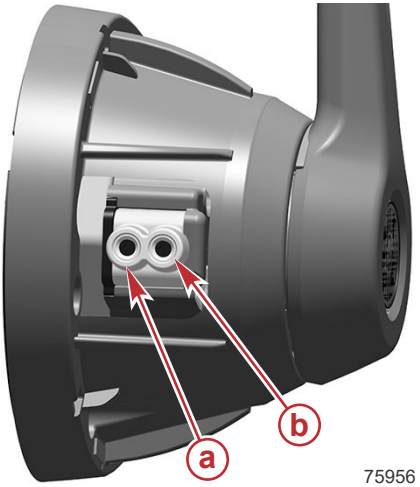
- Small flat-blade screwdriver
- Hex wrench

1. Carefully pry the access cover from the ERC body.

2. Adjust the handle friction and detent as required with the adjustment screws on the ERC.



a - Detent adjustment screw
b - Friction adjustment screw



a - Friction adjustment screw
b - Detent adjustment screw

3. When adjustments are complete, snap the ERC cover into place on the ERC.
4. Press firmly on the four corners to ensure that the tabs are fully engaged and the cover is flush with the surface of the ERC.

Power Tilt System

Introduction to the Power Tilt System

The Avator 75e/110e outboards feature a power tilt system, not a power trim system. The power tilt system is designed to change the angle of the thrust with low or no thrust loads applied to the outboard.

Power tilt allows the operator to use the tilt switch to adjust the tilt position of the outboard from full down to full up. This tilt system is designed to be adjusted when the outboard is at idle speed or with the outboard turned off. At low idle speed, the outboard can be tilted up to permit shallow water operation.

Attempting to change the tilt angle of the outboard with too much load on the propeller, such as when accelerating or operating above 8 km/h (5 mph), will result in no change in the tilt position.

Using the Power Tilt

1. Place the outboard in neutral and reduce the speed below 8 km/h (5 mph)
2. Allow the speed of the boat through the water to stabilize or stop.
3. Press and hold the tilt switch:

- Remote control models–Using the switch on the remote control.

- Tiller models–Raise or lower the tilt position using the switch on the end of the tiller handle.

Tiller handle tilt

4. Place the outboard in a neutral position.
5. Release the tilt switch when the desired tilt position of the outboard is reached.

Using the Cowl Mounted Power Tilt Switch

1. Ensure the outboard is powered off. Refer to **Powering Off the Outboard**.
2. Stay clear of the outboard including the propeller before and while operating the tilt switch.

⚠ CAUTION

Avoid injury due to pinch hazards. Do not place any body parts between the outboard and the boat while operating the tilt switch. Stay clear and be observant of the outboard components while using the cowl mounted tilt switch.

3. Press up or down on the cowl mounted tilt switch to raise or lower the tilt position of the outboard tilt.

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Tilt Lock

The tilt lock feature is a locking mechanism to maintain the position of the outboard in the highest or out of the water position. The feature prevents the outboard from losing its position and falling slowly over time.

This feature is not intended to be used during trailer transporting of the boat. Trailer transportation requires a trailering support brace. Refer to **Transporting**.

Engage the Tilt Lock

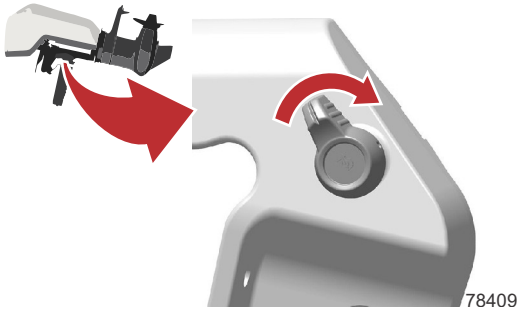
1. Raise the outboard to the highest tilt position:
   - Tiller models - Using the power tilt switch on the tiller handle.


78166

- Remote control models - On the remote control

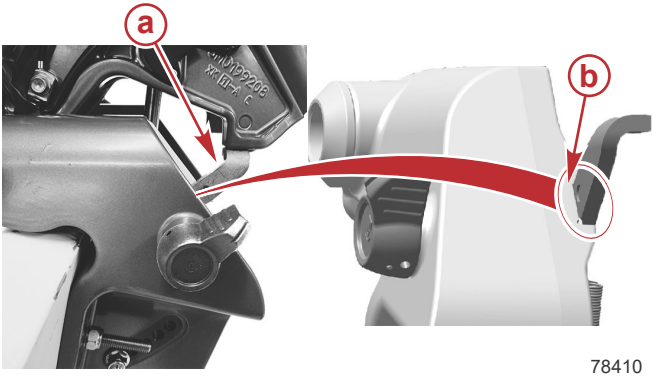
- All models - On the starboard cowl panel

2. Push and twist the tilt lock knob clockwise.



3. Pull out on tilt lock knob to seat the lever into the recess of the transom bracket.

4. Use the power tilt switch to tilt the outboard down until the tilt bracket rests on the lever.



a - Tilt bracket
b - Recess of the transom bracket

Disengage the Tilt Lock

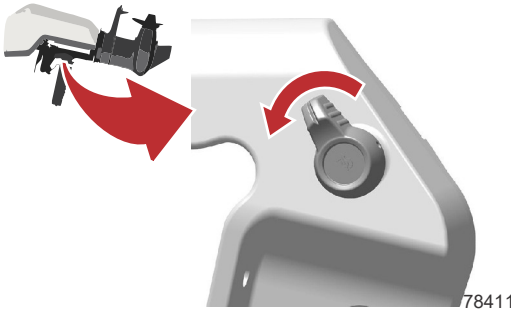
1. Raise the outboard to the highest tilt position:
   - Tiller models - Using the power tilt switch on the tiller handle.

- Remote control models - On the remote control

- All models - On the starboard cowl panel

2. Push in and rotate the tilt lock knob counterclockwise until it hits the travel stop.

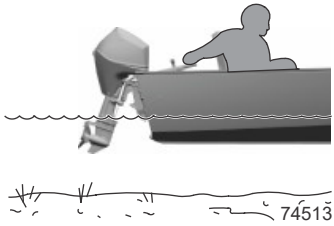
3. Release the tilt lock knob so that it will recess back into the unlocked position.



4. Tilt the outboard down to the desired position.

Shallow Water Operation

When operating the boat in shallow water, the outboard should be raised to the highest tilt position angle necessary to clear all underwater obstacles. Operate the outboard below 8.04 km/h (5 mph) while tilted up for shallow water operation. Keep the propeller blades completely submerged in the water.

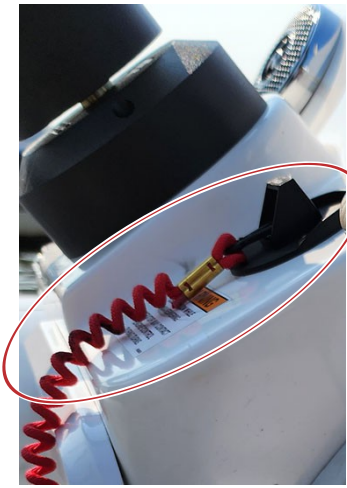


Before raising the tilt level of the outboard into the highest tilt position necessary to clear underwater obstacles. Reduce the speed of the boat to below 8 km/h (5 mph) and allow the speed of the boat to stabilize (not accelerating or decelerating).

While in the shallow water drive position, reversing the outboard may result in little to no thrust due to the propeller elevated position. Operate the outboard at slow speed, and keep the propeller submerged.

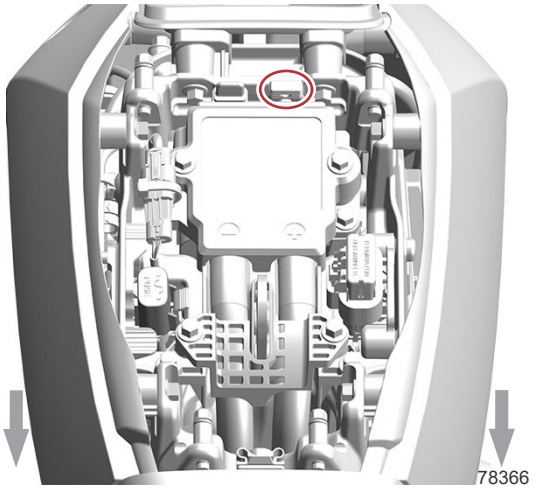
Helm-Mounted Lanyard Stop Switch

The helm-mounted lanyard stop switch shuts off the outboard when the operator moves away from the boat controls, beyond the range of the lanyard cord. Refer to **Important Information - Lanyard Stop Switch**.


75536

Spare Lanyard Stop Switch Clip

There is a spare lanyard clip without a lanyard cord located under the hood of the tiller model outboard. Refer to **Hood Operation**. Use this in case of emergency to get back underway in the event of loss of the lanyard. If the operator of a tiller model 75e/110e using the lanyard falls overboard, use the spare lanyard clip to maneuver the boat back to the operator.



Under the hood

For remote control models the lanyard switch can be toggled to run without a lanyard installed. Use this method only in emergencies. Lanyard use is required by US Coast Guard boating regulations and other international regulatory bodies.

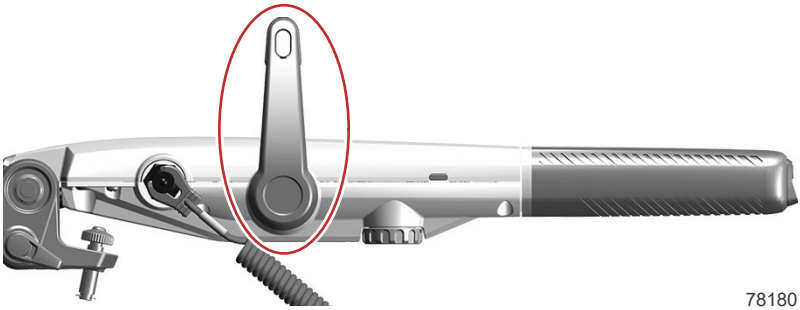
Start-In-Neutral Protection Device

The tiller handle shift controller or the remote control connected to the outboard is equipped with a start-in-neutral only protection device. This prevents the outboard from activating when the remote control or tiller control is placed in any position other than neutral at the time it is powered **ON**. This means that if the outboard is powered up while the shift control on the tiller or remote control is in a forward or reverse position, the outboard will not activate unless the shift control position is returned to neutral first.

⚠ WARNING

Powering ON the outboard with the remote control or tiller in forward or reverse is not recommended and can cause serious injury or death. Never operate a boat with a malfunctioning neutral-safety-protection device.

Before activating the power up sequence, check to make sure that the remote control or the tiller shift handle is in the neutral position.



Neutral

Warning Horn

Remote control models will have the warning horn located under the helm.

Tiller handle models will have the warning horn located under the starboard cowl panel.

Warning Horn Signals

When the key switch is turned to the **ON** position, the warning horn will sound briefly to indicate it is functional. This is normal.

There are two types of warning horn signals to alert the operator of an active problem within the outboard's operating system.

1. **Continuous six second beep:** Indicates a critical outboard condition. Depending on the condition, the Guardian system may engage and protect the outboard by limiting its power. Return to port immediately and contact an authorized dealer.
2. **Intermittent short beeps for six seconds:** Indicates a noncritical outboard condition. This condition does not require immediate attention. Continue boating. Depending on the nature of the problem, however, the outboard's power may be limited by the Guardian system to protect the outboard (refer to **Guardian Safety Feature**). Contact an authorized dealer at the first convenience.

It is important to note that in either of the preceding scenarios, the horn will sound only one time. The horn signal will sound again upon shut down and restart, if the fault that triggered the signal is still present.

A few of the noncritical conditions indicated by the intermittent short beeps for six seconds can be corrected by the operator.

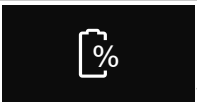
Guardian Safety Feature

The outboard motor is equipped with electronic monitoring of the battery and motor for conditions affecting safe operations. Mercury Marine refers to this system as Guardian. In the event that the Guardian system detects conditions of operation outside of safe parameters, it will notify the operator with an audible warning.

There are two types of audible warnings: A series of six beeps to indicate a cautionary system state and a solid six second horn to indicate a critical system state. In the caution state, Guardian may reduce power to 65% available power, minimally disrupting normal operation. In the critical system state, a parameter has exceeded safe operation. In this state, Guardian may reduce power to 5% available power.

Display Icon Legend

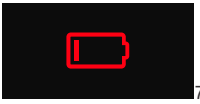
General

Icon	Description
 76104	Battery percent
 76106	Time remaining
 76108	Speed

Icon	Description
 76109	Power (kW)
 76110	Distance remaining
 76111	Settings
 76112	Brightness
 76113	Depth
 76114	Throttle direction

Alarm/Warning

Icon	Description
 76115	Active fault
 76116	GPS fault
 76117	Attach lanyard
 76118	Temperature fault

Icon	Description
 76119	Propulsion fault
 76120	Battery fault
 76121	Charge icon
 76122	Charge text
 76123	Low battery icon
 76124	Low battery text
 76125	Left alarm chevron
 76126	Right alarm chevron

Active Feature

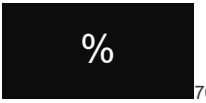
Icon	Description
 76127	Troll active

Positive States

Icon	Description
 76128	Charge icon
 76129	Settings **Saved** text
 76130	Ready state (neutral)

Units/Numbers/Labels

Icon	Description
 76131	Alarm text
 76137	**Type** in alarm type
 76138	**Code** in alarm code
 76139	Power (kW)
 76140	Estimated text (estimated time to charge, estimated range)
 76141	Range text (distance to discharged)
 76143	Kilometers per hour

Icon	Description
 76144	Miles per hour
 76146	% (percent)
 76147	Kilowatts of power
 76148	Knots

Battery Indication

Icon	Description
 76149	Battery scale

Trim Tab Adjustment

IMPORTANT: Do not apply any paint, grease, or other material to the surface of the trim tab.

The trim tab is also a corrosion control anode, and helps prevent galvanic corrosion. It may be necessary to replace the trim tab corrosion control anode before attempting to use it to control steering torque. If the surface of the trim tab is eroded and rough or if the fin is shorter than 6 cm (2.3 in.) from the base, replace the anode before attempting to resolve steering torque.

Propeller steering torque will cause the boat to pull in one direction. This steering torque is a normal result from the outboard not tilted with the propeller shaft parallel to the water surface. The trim tab can help compensate for this steering torque and can be adjusted within limits to reduce any unequal steering effort.

Trim tab adjustment will have little effect reducing steering torque if the outboard is installed with the anti-ventilation plate approximately 50 mm (2 in.) or more above the boat bottom.

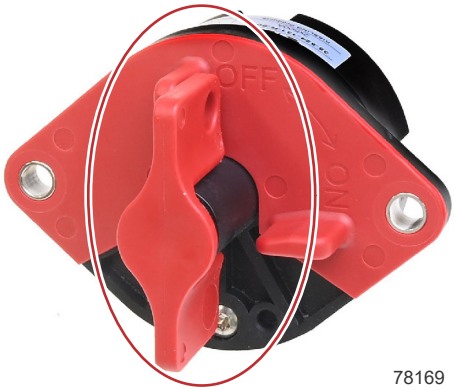
Determine If Adjustment Is Necessary

1. Operate the boat at normal cruising speed with the outboard set at the desired operating angle position.

2. Turn the boat left and right and note the direction the boat turns more easily.
3. If adjustment is necessary, remove the boat from the water.

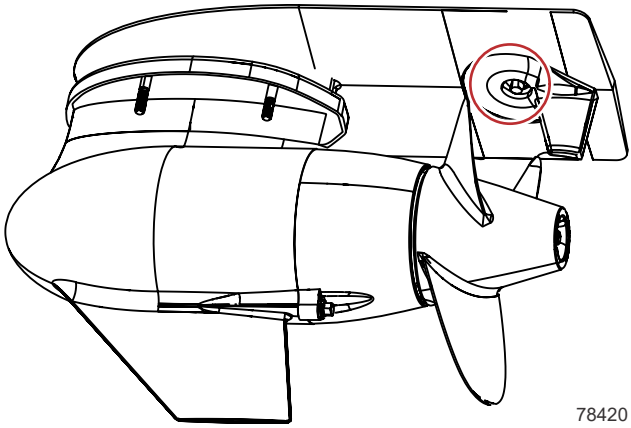
Make Adjustments

1. Turn the outboard off. Refer to **Powering Off the Outboard–Tiller Models** or **Powering Off the Outboard–Remote Control Models**.
2. Use the tilt button to raise the outboard to the highest tilt position. Refer to **Using the Power Tilt**.
3. Engage the tilt lock for safety while adjusting the position of the trim tab. Refer to **Tilt Lock**.
4. Turn the power disconnect switch to the **OFF** position.



78169

5. Loosen the trim tab bolt and make small adjustments at a time.



78420

6. Securely tighten the trim tab bolt.
7. Disengage the tilt lock. Refer to **Tilt Lock**.

IMPORTANT: Use caution when working around the propeller. The propeller is sharp. Contact with the propeller can cause cuts or injuries.

NOTE: *Check for looseness of the bolt and the trim tab at regular intervals. Due to corrosion, the trim tab will wear down over time. The trim tab is located under the anti-ventilation plate.*

8. Turn the power disconnect switch to the **ON** position.

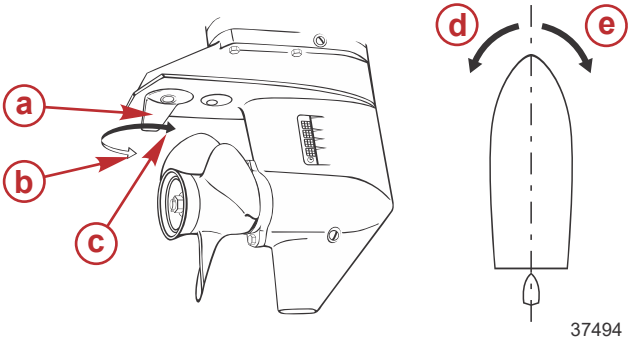
78174

9. Lower the tilt position.

Evaluate Adjustments

Launch the boat and test for correction of the propeller steering torque.

- If the boat steers toward the right, set the trim tab in the direction of **b**.
- If the boat steers toward the left, set the trim tab in the direction of **c**.



37494

a - Trim tab
b - Steers toward the right, set the trim tab in the direction of **b**
c - Steers toward the left, set the trim tab in the direction of **c**
d - Turning left
e - Turning right

Prestarting Checklist

- The operator knows safe navigation, boating, and operating procedures.
- An approved personal flotation device of suitable size is available for each person aboard.
- A ring type life buoy or buoyant cushion designed to be thrown to a person in the water.
- Know the boat's maximum load capacity. Look at the boat capacity plate.
- Battery state of charge (SOC) should be full. Short trips require a minimum of 30% SOC before operating the outboard.
- Arrange passengers and load in the boat so the weight is distributed evenly.
- Tell someone the location and the expected return time.
- Do not operate a boat while under the influence of alcohol or drugs.
- Know the waters and area that will be traversed; tides, currents, sand bars, rocks, and other hazards.
- Make inspection checks listed in **Inspection and Maintenance Schedule.**

⚠ WARNING

Electromagnetic radiation can cause death or severe physical injuries to persons with a cardiac pacemaker or internal defibrillator device.

Anyone with a cardiac pacemaker must maintain a distance of at least 50 cm (19.7 in.) from the battery, motor, and chargers.

Key Pointers of Operation

- Verify the SOC of the battery or batteries using both the battery LED indicators and the display.
- Verify the audible alarm is functional when the outboard is powered up.
- Test the function of the lanyard and verify the lanyard cord is in good condition.
    - Before the lanyard is placed back in the operational position, verify that the tiller handle neutral indications are aligned (tiller handle models).

IMPORTANT: For Avator outboard tiller models, remove the lanyard from its stored position prior to powering up the outboard. This will prevent unintended gear activation of the outboard by the operator.

    - Power up the outboard and place the lanyard back in the operational position.
- Check the system for active faults using the display and the battery LED indicators.

Tiller Models

Powering On the Outboard–Tiller Models

1. Inspect the outboard and check the following items:
   a. The battery or batteries are on. Refer to **Powering the Batteries ON**.
   b. The power disconnect switch is in the **ON** position for powering on the outboard.
   c. The lanyard stop switch is present, slides in and out of position, and the cord is in good condition.
   d. The lanyard cord retainer is attached to the operator.
   e. The throttle handle on the tiller is in the neutral position.
   f. The propeller is in the water and clear of any obstructions.

NOTE: *The operator may choose to remove the lanyard stop switch from its stored position prior to powering on the outboard. This will prevent unintended gear activation of the outboard by the operator and test the lanyard switch for correct operation. Before the lanyard is placed back in its operational position, verify that the tiller handle neutral indications are aligned. Then power on the outboard and place the lanyard back in its operational position. Use the tiller to change the gear position, forward or reverse.*

2. Press the power button on the display.

74744

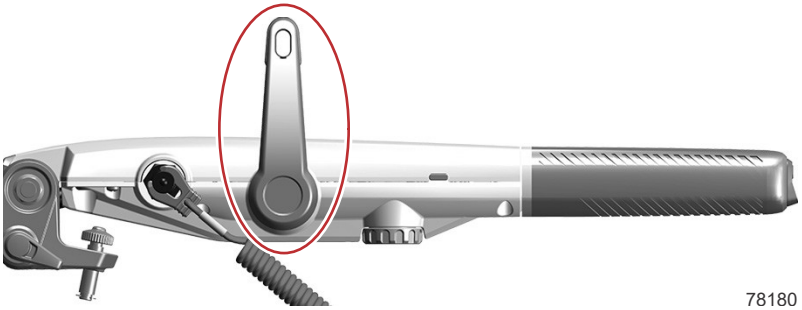
NOTE: *The display will show the current battery percent.*

74745

Operating the Outboard - Tiller Models

Before starting, refer to **Prestarting Checklist**.

1. Verify the tiller shift lever is in the neutral position.

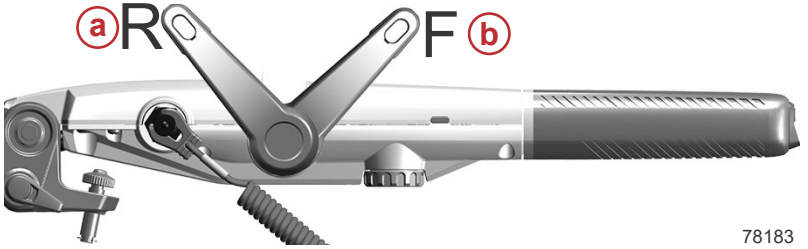


78180

Neutral

2. Press the power button on the display to power on the outboard.
3. Test the lanyard:
   a. Remove the lanyard from the stop switch on the tiller handle.
   b. Install the lanyard on the stop switch and connect it to the operator.
   c. Check the display for an E-stop (emergency stop) fault due to lanyard activation.
   d. Confirm proper lanyard engagement to clear any active E-stop faults.
4. Check the safety and positioning of passengers before operating the outboard.

5. To initiate propeller rotational thrust, place the tiller shift lever in the forward or reverse gear position.



78183

a - Reverse (R)
b - Forward (F)

6. To increase the thrust of the outboard, twist the tiller handle grip either to the left or right.

NOTE: *Throttle direction configuration can be changed depending on operator preference. Refer to* ***Tiller Handle Features - Throttle Rotation Slide Selector****.*

Outboard Settings - Tiller Models

Units of Measure Setup

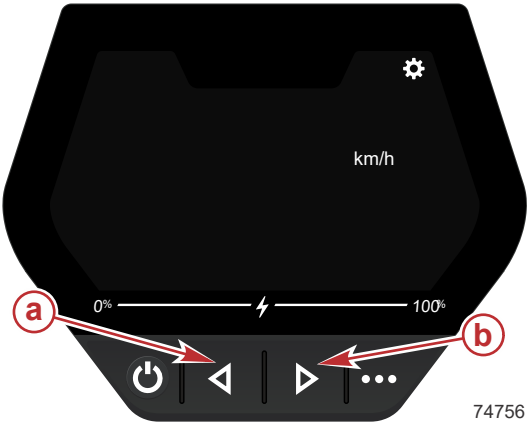
1. Press and hold the menu button for two seconds.

74746

NOTE: *The current unit of measure setpoint will flash.*

74755

2. Use the left or right arrow button to select the type of units to be displayed.



74756

a - Left arrow button
b - Right arrow button

3. Press the menu button to save the setting.

74757

NOTE: *Setup is complete. The display will revert back to the main screen.*

Powering Off the Outboard–Tiller Models

1. Press and hold the power button until the rotating "power down" animation stops and disappears.

74744

2. Perform the following:
   a. If the boat is to be left unattended, turn the power disconnect switch to the **OFF** position.
   b. Turn the battery or batteries off. Refer to **Powering the Batteries OFF**.

Remote Control Models

Outboard Power On Verification

Verify that:

- The battery or batteries are on. Refer to **Powering the Batteries ON**.
- The power disconnect switch or switches are in the **ON** position.
- The lanyard stop switch is present, slides in and out of position, and the cord is in good condition.
- The propellers are in the water and clear of any obstructions.

Operating the Outboard - Dual Applications

Before starting, refer to **Prestarting Checklist** .

1. Set the lanyard stop switch to the **RUN** position. Attach the lanyard to the operator.

19791

2. Verify that the remote control handles are in the neutral position.

78983

Dual remote control handles in neutral

3. Turn both keys to the **ON** position.

4. Push the enable/disable button on the side of the handle, or for individual operation, push the enable/disable buttons on the rear of the remote control.

a - Combined enable/disable button for both outboards
b - Individual enable/disable buttons

5. Check the displays to confirm that there are no active faults or conditions that may cause active faults.
6. Check the safety and positioning of passengers before operating the outboard.
7. Move the remote control levers into the forward or reverse position to move the boat. Refer to **Using and Changing Directional Controls**.

Single-Outboard Operation of a Dual-Outboard Boat

The starboard outboard is the preferred outboard for single-outboard operation of a dual-outboard boat.

- When operating with only the starboard outboard:
  - Turn the port key switch to **OFF**.
  - The port display will be on, but all port outboard and battery data will read as dashes.
- When operating with only the port outboard:
  a. Turn the starboard battery or batteries **ON**. Refer to the *NOTE*, following.
  b. Place the starboard power switch in the **ON** position.
  c. Turn the starboard key switch to **OFF**. The starboard display will be on, but all starboard outboard and battery data will read as dashes.

NOTE: *Operating the port outboard with the starboard battery switch off will yield the following conditions:*

- *The displays for both port and starboard outboards will be* ***OFF****.*
- *The ERC will have lights and will function for the port outboard.*
- *With both displays off, the ERC provides the only source of the port outboard status.*

Operating the Outboard - Single Outboard Remote Control Models

Before starting, refer to **Prestarting Checklist**.

1. Set the lanyard stop switch to the **RUN** position. Attach the lanyard to the operator.

19791

2. Verify the remote control handle is in the neutral position.

75267

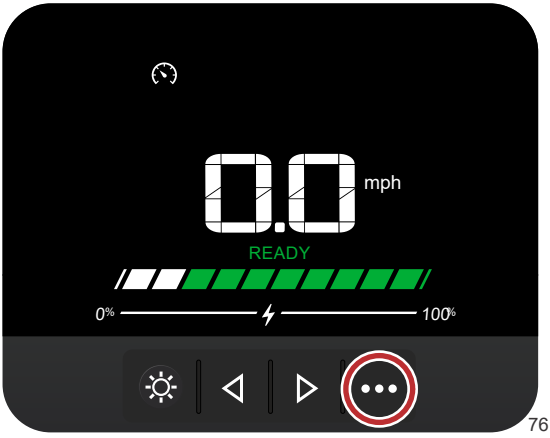
3. Turn the key to the **ON** position.

Key in the ON position

4. Check the display to make sure there are no active faults or conditions that may cause active faults.
5. Check the safety and positioning of passengers before operating the outboard.
6. Move the remote control lever into forward or reverse position to move the boat. Refer to **Using and Changing Directional Controls**.

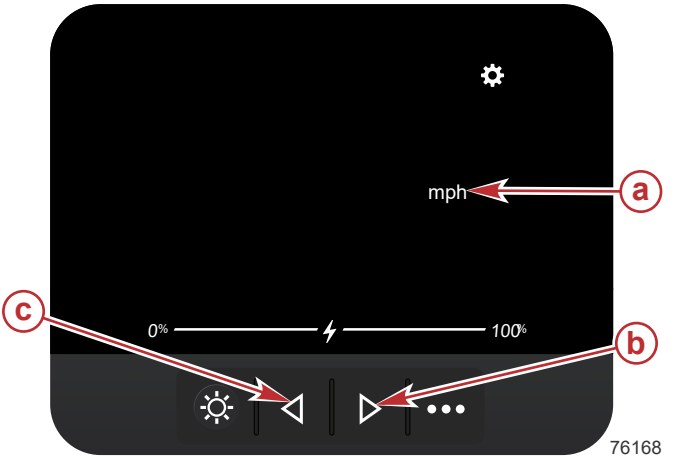
Outboard Settings - Remote Control Models

1. Press and hold the menu button for two seconds.



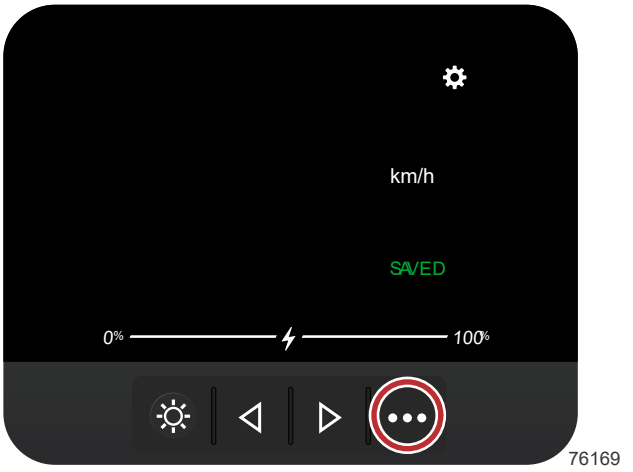
NOTE: *The current unit of measure setpoint will flash.*

2. Press the left or right arrow button to select the type of units to be displayed.

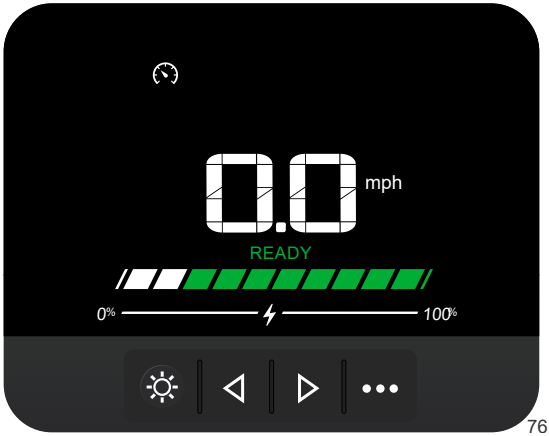


a - Current unit of measure
b - Right arrow button
c - Left arrow button

3. Press the menu button to save the setting.



NOTE: *Setup is complete. The display will revert back to the main screen.*

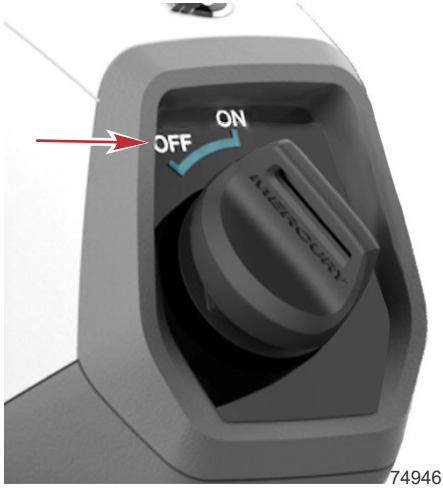


76170

Powering Off the Outboard–Remote Control Models

Power Off

Turn the key to the **OFF** position.



74946

Powering Off the Outboard–Remote Control Models Dual Outboard Applications

1. Place the remote control levers in neutral position.
2. Turn both keys to the **OFF** position. Optionally, the enable/disable buttons can be pressed to disable throttle and shift before turning the keys off.
3. Perform the following:

a. If the boat is to be left unattended, turn the power disconnect switch to the **OFF** position.

b. Turn the batteries off. Refer to **Powering the Batteries OFF**.

Decommissioning the Outboard

1. If the boat is to be left unattended, turn the power disconnect switch to the **OFF** position.
2. For decommissioning and storage when the batteries are not to be charged, turn the battery or batteries off. Refer to **Powering the Batteries OFF**.
3. For storage when the batteries are to be charged by the battery charger, turn the batteries on.

Recommissioning the Outboard

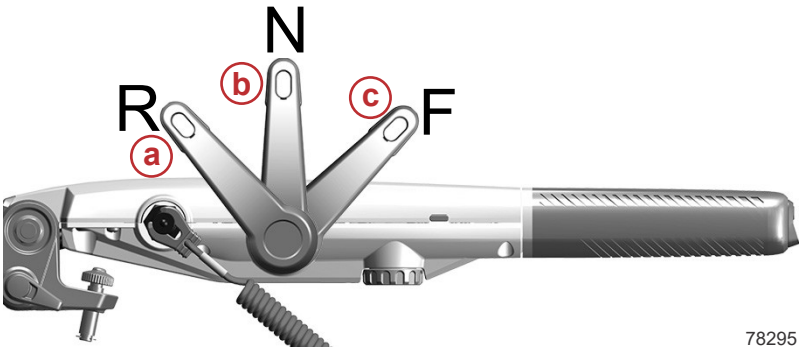
- Ensure the batteries are turned on. Refer to **Powering the batteries ON**.
- Ensure the power disconnect switch is turned to the **ON** position.
- Ensure that the lanyard stop switch is present, slides in and out of position, and that the cord is in good condition.
- Attach the lanyard cord retainer to the operator.
- Ensure that the remote control is in the neutral position.

- Ensure that the propeller is in the water and clear of any obstructions.

Using and Changing Directional Controls

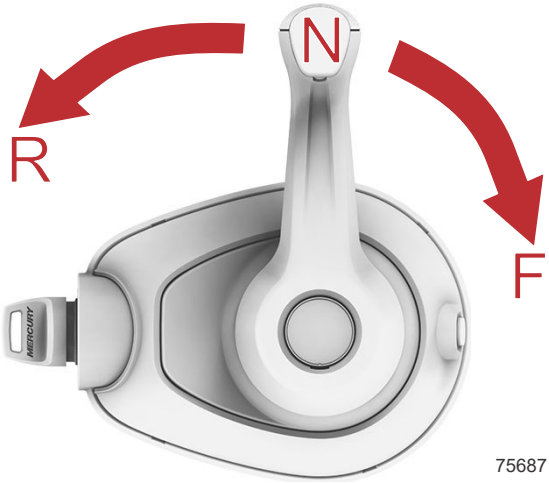
IMPORTANT: Observe the following:

- **Never change the directional control rapidly from reverse to forward without stopping at neutral to allow the propeller to stop spinning. This action could cause outboard and component damage.**
- **Do not change the directional control into reverse when the forward motion of the boat is greater than a no wake speed.**
- **Tiller handle models** - Three directional control positions provide boat operation: forward (F), neutral (N), and reverse (R). When changing directional control, always stop at the neutral position and allow the propeller to stop turning.



a - Forward (F)
b - Neutral (N)
c - Reverse (R)

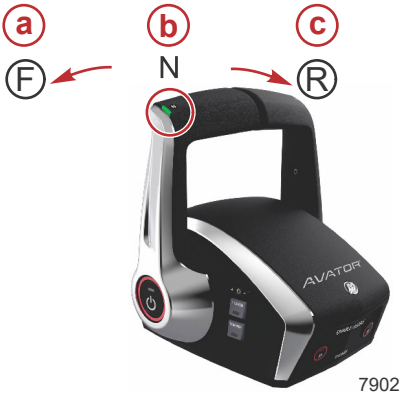
- **Remote control models** - Three directional control positions provide boat operation: forward (F), neutral (N), and reverse (R). When changing directional control position, always stop at the neutral position and allow the propeller to stop turning.



- After placing the directional control into forward or reverse, move the remote control lever or rotate the throttle control grip to move the boat.

Using and Changing Directional Controls
Dual Outboards

- Remote control, dual outboard models—Three directional control positions provide boat operation: forward (F), neutral (N), and reverse (R). When changing directional control position, always stop at the neutral position and allow the propeller to stop turning.



a - Forward (F)
b - Neutral (N)
c - Reverse (R)

NOTE: *When the levers are in the neutral position, the green LED will illuminate.*

- To advance in a forward direction, move both levers simultaneously into forward. To advance in a reverse direction, move both levers simultaneously into reverse direction. To yaw the boat about its own axis, move one lever in forward and one lever in reverse.

Recommended Operating Temperature Ranges for the Avator 75e/110e Outboards

The Avator75e/110e outboards and 5400 Wh batteries were designed to operate within the ambient air temperature ranges between -20 °C (-4 °F) and 35 °C (95 °F).

Operating above the recommended ambient air temperature limit could cause the motor or battery to overheat.

The following conditions will occur if high temperature limits are exceeded during operation:

1. The outboard will begin to reduce the power output when the battery core temperature reaches 53 °C (127 °F). Power output will be reduced until the battery cools down.
2. If the battery temperature exceeds 60 °C (140 °F), the battery will shut down and the display and motor will be rendered non-functional until the battery temperature is reduced.

Operating in Saltwater or Polluted Water

If the boat is kept in the water, and if possible tilt the outboard so the outboard lower motor unit is completely out of the water when not in use.

Wash the outboard exterior with fresh water after each use. Each month, spray Mercury Precision or Quicksilver Corrosion Guard on external metal surfaces. Do not spray on corrosion control anodes as this will reduce the effectiveness of the anodes.

Conditional Operating, Storage, Charging, and Maintenance Instructions

- Do not turn the power switch to the **OFF** position while underway.
- Replace the power switch if used to break the connection of battery power to a powered and active outboard.
- Do not attempt to power any accessory electrical components, except those approved by Mercury Marine from the Mercury Avator battery.
- Charge the batteries with the outboard powered off and the power disconnect switch in the **OFF** position.
- Charge the batteries with the battery or batteries powered on.
- Do not pressure wash any component of the outboard, the battery, Power Center, or any charging component.
- The Power Center must be mounted above the static waterline of the boat.

- Avator batteries must be the same type and chemistry to be connected in parallel.
- Do not use dissimilar battery chemistry types.

Notes:

Cleaning and Detailing

Outboard Cleaning

To keep the outboard in the best operating condition, it is important that the outboard receive the periodic inspections and maintenance listed in the **Inspection and Maintenance Schedule**. Mercury Marine urges the operator to keep it maintained properly to ensure that the safety of the operator and the passengers, and retain its dependability.

Record maintenance performed in the **Maintenance Log**. Save all maintenance work orders and receipts.

Selecting Replacement Parts For the Outboard

Mercury Marine recommends using original Mercury Precision, Mercury Avator, or Quicksilver replacement parts.

IMPORTANT: Do not power wash the outboard, the batteries, the remote control, the display, or any portion of any power cable.

Caustic Cleaning Chemicals

IMPORTANT: Do not use caustic cleaning chemicals on the outboard. Some cleaning products contain strong caustic agents such as hull cleaners with hydrochloric acid. These cleaners can degrade some of the components they come in contact with including critical steering fasteners.

Damage to steering fasteners may not be obvious during visual inspection and this damage may lead to catastrophic failure. Some caustic cleaning chemicals may cause or accelerate corrosion. Exercise caution when using cleaning chemicals around the outboard and follow the recommendations on the packaging of the cleaning product.

Cleaning Display Screens

IMPORTANT: Never use high-pressure water to clean Avator outboards or electronic displays.

Routine cleaning of the displays is recommended to prevent a buildup of salt and other environmental debris. Crystalized salt can scratch the display screens, even when using a dry or damp cloth. Ensure that the cloth has a sufficient amount of fresh water to dissolve and remove salt or mineral deposits. Do not apply aggressive pressure on the display screen while cleaning.

When water marks cannot be removed with a damp cloth, mix a 50/50 solution of warm water and isopropyl alcohol to clean the display screen. **Do not use** acetone, mineral spirits, turpentine type solvents, or ammonia based cleaning products. The use of strong solvents or detergents may damage the coating, the plastics, or the rubber keys on the gauges. If the gauge has a sun cover available, it is recommended that the cover be installed when the unit is not in use to prevent UV damage to the plastic bezels and rubber keys.

Cleaning Remote Controls

IMPORTANT: Never use high-pressure water to clean remote controls.

Routine cleaning of the remote control external surfaces is recommended to prevent a buildup of salt and other environmental debris. Use a cloth towel which has a sufficient amount of fresh water to dissolve and remove salt or mineral deposits.

When water marks cannot be removed with a damp cloth, mix a 50/50 solution of warm water and isopropyl alcohol to clean the remote control. **Do not use** acetone, mineral spirits, turpentine type solvents, or ammonia based cleaning products. The use of strong solvents or detergents may damage the coating, the plastics, or the rubber components on the remote control.

Cleaning Cowls

IMPORTANT: Do not wipe the cowl panel when it is dry. This action will result in minor surface scratches. Always wet the surface before cleaning. Do not use detergents containing hydrochloric acid.

Cleaning Procedure

1. Before washing, rinse the cowls with clean water to remove dirt and dust that may scratch the surface.
2. Wash the cowls with clean water and a mild nonabrasive soap. Use a soft clean cloth when washing.
3. Stubborn stains or residue on the cowl panels can be removed using a 40% isopropyl alcohol on a clean damp cloth. Rinse the area with clean water immediately.
4. Dry thoroughly with a soft clean cloth.

Cleaning Under Cowl Components (Saltwater Use)

If the outboard is operated in saltwater, as part of annual maintenance, have an authorized dealer remove the cowling for inspection of salt buildup and cleaning of salt deposits on components. Wash off any salt buildup from the under cowl components with fresh water. After washing, allow the under cowl components to dry. Apply Quicksilver or Mercury Precision Lubricants Corrosion Guard spray on the external metal surfaces of the under cowl components.

IMPORTANT: Before applying Corrosion Guard under the cowl, ensure all electrical connections are weather capped and the fuse cover is installed.

Description	Where Used	Part No.
Corrosion Guard	External metal surfaces of the under cowl components.	92-802878 55

Inspection and Maintenance Schedule

After each use of the outboard be sure to:

- Wash the power package exterior with fresh water. For precaution information, refer to **Outboard Cleaning**.

Daily Check
Check that activating the lanyard stop switch disables propeller rotation.
Check for loose or missing transom clamp bolts (4). The transom clamp bolts are for use only on the 75e/110e transom bracket. **IMPORTANT: No accessories should use these bolts for mounting.**
Check the steering system for binding.
Inspect the propeller for damage.
Inspect the propeller nut. It should not be loose.
Inspect the batteries, cables, and Power Center (if equipped) for damage, external signs of submersion or water exposure, and proper installation.
Check the state of charge of the battery.

Annual Maintenance (Every Year or Before Long-Term Storage)	Dealer Item
Charge the batteries fully before long-term storage and every six months.	
Check the hydraulic fluid level in the tilt cylinder fluid reservoir. Add Mercury Power Trim and Steering fluid to the reservoir if it is not full.	
Verify the condition and LED status of the battery charger.	
Inspect the corrosion control anode. Refer to **Corrosion Control Anode**.	
Inspect the condition of the outboard lower unit housing paint. Use the appropriate paint to touch-up nicks and scratches.	
Inspect the battery connections in the battery compartment and on the battery for damage, corrosion, or signs of excessive heat.	X
Inspect the battery connections in the battery compartment and on the battery for the proper torque.	X
Inspect the outboard mounting hardware for damage and proper torque specifications. The transom clamp bolts are made for use only on the 75e/110e transom bracket.	X
Inspect all continuity wires for damage and proper connection.	X

Annual Maintenance (Every Year or Before Long-Term Storage)	Dealer Item
1. Remove the propeller from the outboard. 2. Check the condition of the propeller shaft. 3. Inspect the propeller rubber hub for damage or separation. 4. Replace the propeller if there are signs of hub damage. **IMPORTANT: Do not apply grease to the threads of the shaft.** 5. Apply Mercury 2-4-C Marine Grease to the propeller shaft where the propeller contacts the shaft.	

3 Year Maintenance (Every 3 years in storage or in use. Includes all checks above)	Dealer Item
Remote control models only - Inspect the helm and outboard wire harness connectors. **IMPORTANT: Do not use any type of contact cleaner on the helm or outboard wire harness. Contact cleaner is harmful to the seals of the connectors.** **Do not use any form of contact inhibiting di-electric grease in the connectors or contact points of the electrical system.**	X
Inspect the tilt system operation from all tilt switches on the boat. Look at all tilt components for damage, bare exposed or pinched wires, external corrosion or fluid leakage.	X
Inspect the outboard lower unit isolation mounts for damage and proper torque specifications.	X

Description	Where Used	Part No.
2-4-C with PTFE	Propeller shaft where the propeller contacts the shaft.	92-802859A 1
Power Trim and Steering Fluid	Power trim cylinder fluid reservoir. Part number: Quicksilver 858074Q01, MERCURY 92-858075K01	92-858074K01

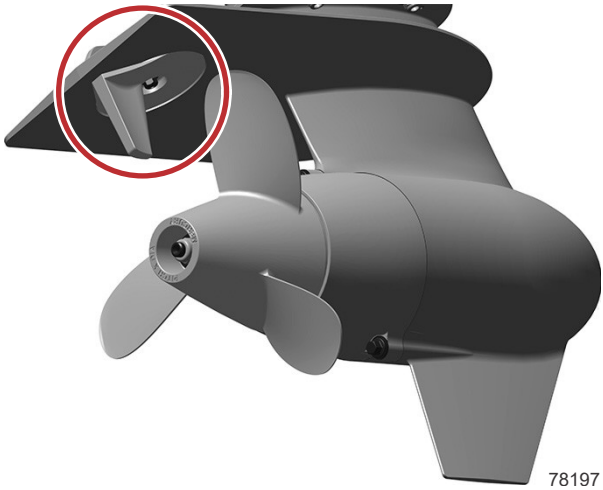
Corrosion Control Anode

The outboard has one corrosion control anode mounted on the underside of the anti-ventilation plate (AVP). The anode helps protect the outboard against galvanic corrosion by sacrificing its metal to be slowly corroded instead of the outboard metals.

IMPORTANT: Do not paint or apply a protective coating on the anode, this will reduce the effectiveness of the anode.

The anode requires periodic inspection, especially in saltwater, which will accelerate the erosion. To maintain corrosion protection, always replace the anode:

- Before it is completely eroded.
- If the surface of the anode is rough.
- If the fin of the trim tab portion of the anode is shorter than 6 cm (2.3 in.).



Propeller Installation and Removal

Propeller Installation

⚠ WARNING

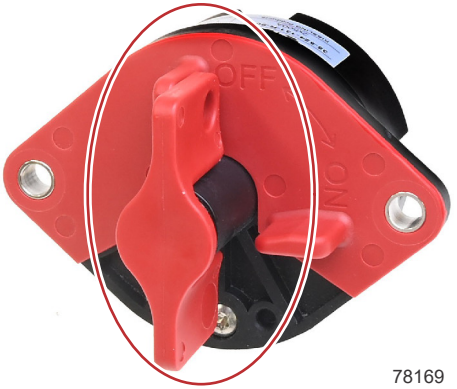
Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the outboard in neutral and activate the lanyard stop switch to prevent the outboard from starting.

IMPORTANT: Do not use an impact or power tool to install the propeller nut on the propeller shaft.

When loosening the propeller nut, a soft block such as plastic or wood can be used between the anti-cavitation plate and a propeller blade to hold the propeller from rotating. Do not attempt to hold the blade with a bare hand.

1. Turn the outboard off. Refer to **Powering Off the Outboard–Tiller Models** or **Powering Off the Outboard–Remote Control Models**.

2. Turn the power disconnect switch to the **OFF** position.



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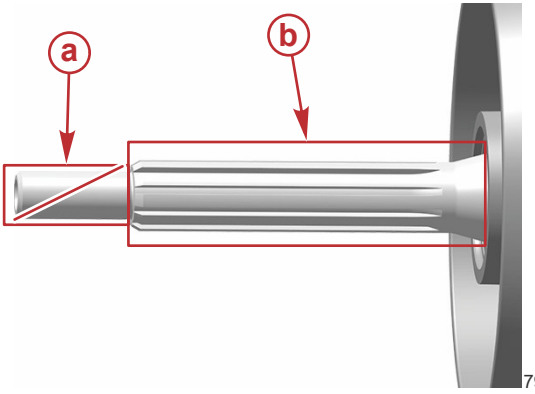
IMPORTANT: Do not apply Extreme Grease or 2-4-C with PTFE to the threads of the propeller shaft.

3. Apply a coat of the recommended lubricant to the non-threaded areas of the propeller shaft, including the propeller shaft splines and the taper.

Description	Where Used	Part No.
2-4-C with PTFE	Non-threaded areas of the propeller shaft	92-802859A 1
Extreme Grease	Non-threaded areas of the propeller shaft	8M0190472



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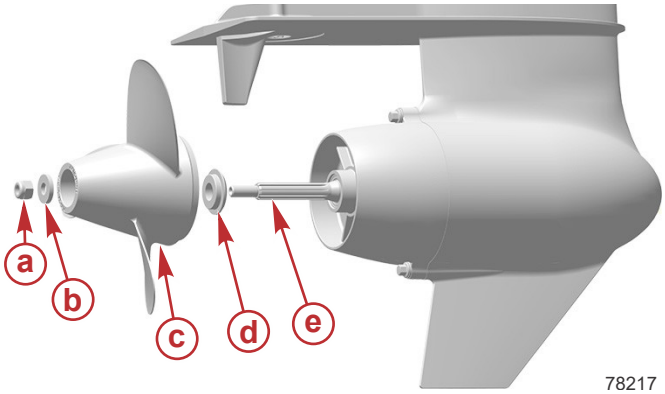
a - Threaded area (do not apply lubricant)
b - Non-threaded area (splines and taper)

4. Install the thrust washer onto the propeller shaft by sliding it all the way forward on the shaft until it stops.

IMPORTANT: The propeller blades are sharp.

5. Install the propeller onto the propeller shaft by sliding it forward up against the thrust washer.
6. Install the propeller washer and the propeller retainer nut onto the propeller shaft.

NOTE: *Thread the nut by hand in a clockwise direction.*



- **a -** Nut
- **b -** Washer
- **c -** Propeller
- **d -** Thrust washer
- **e -** Propeller shaft

7. Prevent the propeller from moving with an appropriate tool.

IMPORTANT: Do not use an impact or power tool to install the propeller nut on the propeller shaft.

8. Tighten the propeller nut to the specified torque.

Description	Nm	lb-in.	lb-ft
Propeller nut	8.5	75.2	–

Propeller Removal

⚠ WARNING

Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the outboard in neutral and activate the lanyard stop switch to prevent the outboard from starting.

IMPORTANT: Do not use an impact or power tool to remove the propeller nut from the propeller shaft.

Do not attempt to hold the blade with a bare hand.

When removing the propeller nut, a soft block, such as plastic or wood, can be used between the anti-cavitation plate and a propeller blade to hold the propeller from rotating. Do not attempt to hold the blade with a bare hand.

1. Turn the outboard off. Refer to **Powering Off the Outboard–Tiller Models** or **Powering Off the Outboard–Remote Control Models**.
2. Turn the power disconnect switch to the **OFF** position.

IMPORTANT: The propeller blades are sharp.

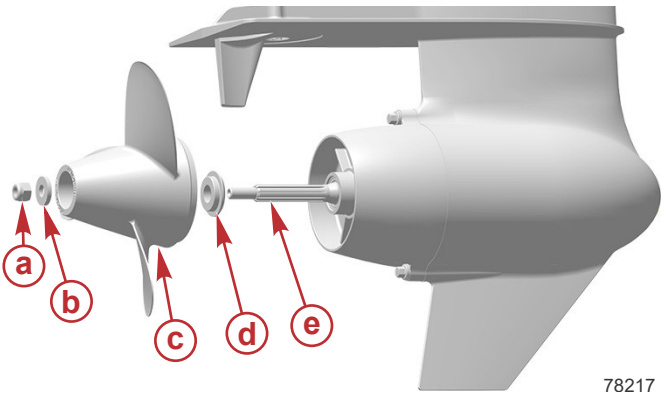
3. Prevent the propeller from moving with an appropriate tool.

IMPORTANT: Do not use an impact or power tool to remove the propeller nut from the propeller shaft.

4. Remove the propeller nut from the propeller shaft in a counterclockwise direction.

NOTE: *If the propeller has spun around the hub from impact or damage, use a flat-blade screwdriver in the slot on the end of the propeller shaft to hold the shaft as the nut is removed.*

5. Remove the washer, propeller, and thrust washer from the propeller shaft.

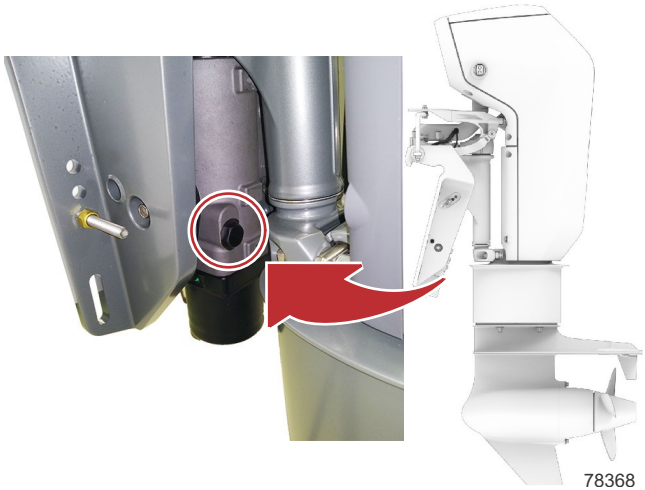


a - Nut
b - Washer
c - Propeller
d - Thrust washer
e - Propeller shaft

6. Inspect the threads for galling or damage.
7. Inspect propeller shaft for damage or bends by rotating it by hand.

Checking the Hydraulic Fluid Level in the Tilt Cylinder Fluid Reservoir

1. Remove the filler plug from the hydraulic tilt cylinder.



2. Use a cotton swab or suitable sized object to verify that the level of hydraulic fluid is even with the bottom of the filler hole.
3. If required, add Mercury Power Trim & Steering fluid until the level of fluid is even with the bottom of the filler hole.

Description	Where Used	Part No.
Power Trim and Steering Fluid	Hydraulic tilt cylinder	92-858074K01

4. Start the filler plug by hand. Tighten the filler plug to the specified torque.

Description	Nm	lb-in.	lb-ft
Filler plug	5	44.3	–

Notes:

Protecting External Outboard Components

- Lubricate all outboard components listed in **Inspection and Maintenance Schedule**.
- Touch-up any paint nicks. See the local dealer for touch-up paint.
- Spray Quicksilver or Mercury Precision Lubricants Corrosion Guard on external metal surfaces (except corrosion control anodes).

IMPORTANT: Do not apply corrosion guard to the exposed terminals of the battery connection.

Do not spray corrosion guard to the battery, outboard, or cables unless the weather cap or cover is installed on the connector.

Description	Where Used	Part No.
Corrosion Guard	External metal surfaces	92-802878 55

Winterization and Storage

NOTE: *Mercury Marine recommends charging the battery using the integrated battery charger for the duration of storage. Refer to* ***5400 Wh Battery Charging —Boat Removed From the Water****.*

- If the integrated battery charger cannot be powered for the duration of the storage period, always fully charge the batteries before placing the boat or battery storage.
- For storage where the batteries will not be charged, turn the batteries off. Refer to **Powering the Batteries OFF**.
- For storage where the batteries will be charged, turn the batteries on. Refer to **Powering the Batteries ON**.
- If the batteries or boat will be placed in storage longer than six months, fully charge the battery every six months. Refer to **5400 Wh Battery Installation and Operation Manual**.
- If the boat cannot be stored within the recommended temperature ranges, the batteries may be removed from the boat to be stored in an area that meets the recommended temperature ranges. Refer to the **5400 Wh Battery Installation and Operation Manual**.

IMPORTANT: Mercury Marine strongly advises that only a certified and trained technician or installer perform battery removal or battery charger removal from the boat.

Battery Temperature Ranges		
Charging temperature range - see NOTE		-20 °C to 35 °C (-4 °F to 95 °F)
Operating temperature range		-20 °C to 35 °C (-4 °F to 95 °F)
Battery storage temperature ranges	0-30 days	-20 °C to 45 °C (-4 °F to 113 °F)
	Beyond 30 days	0 °C to 35 °C (32 °F to 95 °F)

NOTE: *The battery contains an internal heating element that will keep the batteries core temperature above 0 °C (32 °F) when actively being charged.*

Conditions Affecting Performance

Weather

Weather conditions exert a profound effect on the power output of outboard motors. Established power ratings refer to the power the outboard produces at the propeller shaft. The rating does not take into account external forces such as current or wind.

Summer conditions of ambient air temperature, direct sunlight, and high humidity can reduce the battery and motor ability to maintain low operating temperatures. During use, if a battery core internal temperature exceeds 60 °C (140 °F), a critical battery overheat fault will occur and that battery will shut down. If all batteries shut down, the outboard will not power up until the core temperature of at least one of the batteries is reduced. In elevated, but non-critical battery overheat events, battery core temperatures of 50 °C (122 °F) will result in a reduced-power operating state. If the internal battery temperature reduces, the full-power operating state will return.

Climate

Climate changes may affect the performance of the power package. Over-temperature faults, reduced available power, and battery shut-down can be caused by:

- Higher temperatures
- High humidity

Weight Distribution (Passengers and Gear) Inside the Boat

Shifting weight to rear (stern):

- Generally increases speed and outboard RPM.
- Causes the bow to bounce in choppy water.
- Decreases forward visibility of the boat when traveling at higher speeds.
- Weight extremes can cause the boat to porpoise.

Shifting weight to front (bow):

- Improves forward visibility during higher speeds.
- Improves rough water ride.
- Weight extremes, can cause the boat to veer back and forth (bow steer).

Cavitation

Cavitation occurs when water flow cannot follow the contour of a fast-moving underwater object, such as an outboard lower unit housing or a propeller. Cavitation increases propeller speed while reducing boat speed. Cavitation can seriously erode the surface of the motor lower unit housing or the propeller. Common causes of cavitation are:

- Weeds or other debris snagged on the propeller
- Warped, nicked, broken, or missing propeller blade

- Raised burrs or sharp edges on the propeller

Propeller

The Avator propeller is installed at the time of outboard installation using boat testing to verify the correct propeller has been selected. Mercury Marine offers propeller choices for the 75e/110e outboard in the following pitches:

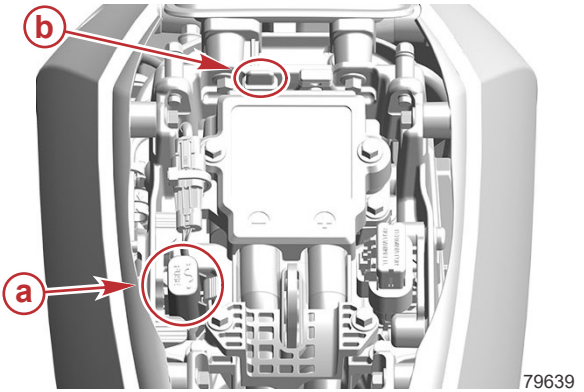
- 8 in.
- 9 in.
- 10.5 in.

Choosing another propeller should take into account low-speed handling characteristics that may be affected negatively by a higher-pitch propeller, as well as range that may be affected negatively by a lower-pitch propeller. Top speed may be lost by choosing a propeller that is either higher or lower in pitch than the current propeller.

Fuse Replacement

Fuse Location

The outboard 12-volt, 5-amp fuse is located under the hood.



a - 5-amp fuse
b - Spare fuse

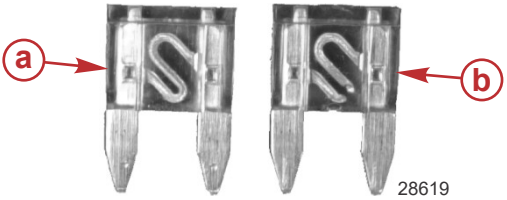
Fuse Identification and Replacement

IMPORTANT: Always carry spare ATC or ATO 5-amp, 12-volt fuses.

Do not attempt to service the 48-volt circuit fuse. If suspected to be failed, the outboard needs to be serviced by an authorized technician.

IMPORTANT: Do not place a fuse of higher amperage rating in place of the 5-amp, 12-volt fuse. Damage to the wiring or components of the outboard may result.

Remove the 5-amp, 12-volt fuse and examine the silver colored band inside the fuse. If the band is broken, replace the fuse. Replace the fuse with a new fuse of the same type and rating.



Identifying an open fuse

a - Good fuse

b - Open (blown) fuse

Power Center Fuses (Dealer Service Only)

Qualified and trained personnel only: Use only compatible fuses (amperage and voltage) to replace serviceable fuses inside the power center.

- Battery charger fuse: MINI 30-amp, 58 VDC
- Battery charger fuse: M10 Zcase 60-amp, 58 VDC
- Power fuse: M10 Zcase 150-amp, 58 VDC
- Power fuse: M10 Zcase 425-amp, 58 VDC

Outboard Will Not Power Up

If the outboard has discharged the batteries to a very low state, the batteries will need to be charged as soon as possible to prevent permanent battery damage and negative affects to the warranty of each battery.

Possible Causes	Recommended Maintenance
Power disconnect switch is turned to the **OFF** position.	For remote control models, ensure key is in the **OFF** position. Turn the power disconnect switch to the **ON** position. Retry powering on the outboard.
Batteries are not on.	To power on the 5400 Wh batteries, ensure the outboard is off, and the power disconnect switch is turned to the **OFF** position. Press and hold the battery power/status button on each battery for five seconds. After turning all batteries on, turn the power disconnect switch to the **ON** position, and turn the outboard on.
Batteries are in standby mode.	If the batteries are below 30% state of charge after 9 hours of being left on and not being charged, to conserve power, the batteries will enter standby mode. This is displayed as a single flashing white LED. To remove all connected batteries from standby mode, press any battery button for 1 second and release. All batteries will turn on. Verify they are on by observing the battery LEDs for a single solid white LED.

Possible Causes	Recommended Maintenance
Battery connections are not secure.	The outboard needs to be serviced by an authorized technician.
Battery is discharged or faulted.	Press the button on each battery to check the LED state. Refer to **5400 Wh Battery State Of Charge (SOC) Status**.
The fuse is open.	Refer to **Fuse Replacement**.
Electrical or mechanical component failure.	The outboard needs to be serviced by an authorized technician.
Wiring or electrical connection faulty.	The outboard needs to be serviced by an authorized technician.

Outboard Losing Power Intermittently

Possible Causes	Recommended Maintenance
Multiple battery SOCs are not even with each other.	Fully charge the batteries.
The outboard is being used in environment at or below freezing temperatures -20 °C (-4 °F).	Operate the boat only in areas that meet the operating temperature requirements. Refer to **Battery Storage, Usage, and Charging Temperature Ranges**.
Lanyard stop switch is not completely in the operating position.	Ensure that the lanyard is installed correctly.
Battery is overheating.	Check the system for faults related to over-temperature and verify the audible alarm is functioning.
Low battery.	Check the SOC by pressing the button on each battery or referencing the display for the combined battery SOC.
Battery connection is not secure.	The outboard needs to be serviced by an authorized technician.
Poor wiring connections.	

Performance Loss

Possible Causes	Recommended Maintenance
Low battery.	Check the SOC of each battery by pressing the button on each battery or referencing the display for the combined SOC. Fully charge the batteries.

Possible Causes	Recommended Maintenance
Tiller control throttle or remote control throttle not working correctly.	Check operation for free travel and ensure that there are no faults. If any faults occur, the outboard must be serviced by a Mercury Authorized Dealer.
Damaged or improper size propeller.	Refer to **Specifications** or **Propeller Installation and Removal**.
Boat overloaded or load improperly distributed.	Distribute the weight evenly.
Excessive water in bilge.	Drain water from the bilge.
Boat bottom is dirty or damaged.	Clean the boat.

Battery Will Not Hold Charge

IMPORTANT: Imminent and permanent battery failure can be caused by each of the following abusive scenarios: Battery overheating, storing the battery for extended periods while depleted, punctures to the battery casing, damage from dropping, water submersion, or incorrectly connecting external wiring creating a short circuit. Never try to use a battery that has case damage, was submerged, short circuited, or has a fault indicating failure on the LED battery status lights. Refer to 5400 Wh Battery State Of Charge (SOC) Status.

Possible Causes	Recommended Maintenance
Battery connections are loose or corroded.	The outboard needs to be serviced by an authorized technician.
Worn out or inefficient battery.	
Unapproved electrical accessories drawing power from the Avator battery.	
Defective battery or electrical components.	

Battery Will Not Charge with Charger

Possible Causes	Recommended Maintenance
Charger not compatible with Avator outboard.	**IMPORTANT: Do not use any charger except Mercury Avator specific chargers. Aftermarket chargers may damage the battery.**

TROUBLESHOOTING

Possible Causes	Recommended Maintenance
The charger is either disconnected or has no connection to a GFCI 110-240 VAC outlet.	Ensure full engagement of the AC outlet to the charger. Check that the shore power is connected and locked and that AC power is enabled on the boat. Check connectors between the battery and the charger.
Battery temperature is elevated.	Disconnect the charger from the 110-240 VAC power outlet and allow the battery to cool before reconnecting.
Battery is faulted.	Use the LEDs on the charger and battery to determine faults, charge status, and charger function.

Identification Records

The serial numbers are the manufacturer's keys to numerous engineering details that apply to your Mercury Marine power package. When contacting Mercury Marine about service, **always specify Avator outboard and battery serial numbers.**

Record the following applicable information:

Outboard		
Outboard Model and Rating		
Outboard Serial Number		
Battery Serial Number(s)		-
		-
		-
		-
Propeller Part Number	**Pitch***	
Watercraft Identification Number (WIN) or **Hull Identification Number (HIN)**		**Purchase Date**
Boat Manufacturer	**Boat Model**	**Length**

NOTE: **The Avator 75e/110e outboard does not ship with a propeller installed. The installer or boatbuilder selects the propeller based on performance and boat specifications. The primary recommended propeller is a 9 inch pitch propeller. Mercury offers an 8 inch pitch, a 9 inch pitch, and a 10.5 inch pitch for the Avator 75e/110e outboards. To purchase replacement propellers contact the local Mercury Marine Authorized Dealer. Do not use aftermarket propellers with this product as damage may occur.*

75e/110e Propellers	**Part number**
8 in. pitch	8M0217210
9 in. pitch	8M0217211
10.5 in. pitch	8M0217212

Service Assistance

Local Repair Service

If your Mercury-outboard-powered boat needs service, take it to a Mercury Marine Authorized Dealer. Only authorized dealers specialize in Mercury products and have factory-trained mechanics, special tools and equipment, and genuine Mercury parts and accessories to properly service your outboard.

Service Away From Home

If you are away from your local dealer and the need for service arises, contact the nearest authorized dealer. If, for any reason, you cannot obtain service, contact the nearest Regional Service Center. Outside the United States and Canada, contact the nearest Marine Power International Service Center.

Stolen Power Package

If your power package is stolen, immediately advise the local authorities and Mercury Marine of the model and serial numbers and to whom the recovery is to be reported. This information is maintained in a database at Mercury Marine to aid authorities and dealers in the recovery of stolen power packages.

Attention Required After Submersion

IMPORTANT: Refer first to Handling Damaged, Defective, or Submerged Products.

A submerged outboard requires service within a few hours by a Mercury Marine Authorized Dealer, after the outboard is recovered from the water. This immediate attention by an authorized dealer is necessary after the outboard is exposed to the atmosphere to minimize electrical connector and outboard corrosion damage. Do not attempt to use an outboard or battery that has been submerged without seeking authorized service for the submerged components.

1. Before recovery, contact a Mercury Marine Authorized Dealer.
2. After recovery, immediate service by a Mercury Marine Authorized Dealer is required to reduce the possibility of serious outboard damage.

Replacement Service Parts

⚠ WARNING

Avoid fire or explosion hazard. Battery, motor, and electrical wiring components on Mercury Marine products comply with federal and international standards to minimize risk of fire or explosion. Do not use replacement battery, motor, or electrical wiring components that do not comply with these standards. When servicing the electrical system, properly install and tighten all components.

Mercury Avator batteries and outboards are designed and built using purposed parts for marine environments, both fresh and salt water. Using aftermarket parts or components may cause premature failure, damage, or expose the operator to safety risks. Use only Mercury Avator parts and components with the outboard.

Parts and Accessories Inquiries

Direct any inquiries concerning genuine Mercury Avator parts or accessories to a local Mercury Marine Authorized Dealer. Dealers have the proper systems to order parts and accessories. Outboard and battery **serial number** are required to order correct parts.

OPERATOR SERVICE ASSISTANCE

Resolving a Problem

Satisfaction with your Mercury Marine product is important to your dealer and to us. If you ever have a problem, question or concern about your power package, contact any Mercury Marine Authorized Dealer. If you need additional assistance:

1. Talk with the dealership's sales manager or service manager.
2. If your question, concern, or problem cannot be resolved by your dealership, please contact the Mercury Marine Service Office for assistance. Mercury Marine will work with you and your dealership to resolve all problems.

The following information will be needed by the Customer Service:

- Your name and address
- Your daytime telephone number
- The model and serial numbers of the outboard and batteries
- The name and address of your dealership
- The nature of the problem

Contact Information for Mercury Marine Customer Service

For assistance, call, fax, or write to the geographic office in your area. Please include your daytime telephone number with mail and fax correspondence.

<table>
<tr><th colspan="3">United States, Canada</th></tr>
<tr><td>Telephone</td><td>English +1 920 929 5040
Français +1 905 636 4751</td><td rowspan="2">Mercury Marine
W6250 Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54936-1939</td></tr>
<tr><td>Fax</td><td>English +1 920 929 5893
Français +1 905 636 1704</td></tr>
<tr><td>Website</td><td colspan="2">www.mercurymarine.com</td></tr>
</table>

<table>
<tr><th colspan="3">Australia, Pacific</th></tr>
<tr><td>Telephone</td><td>+61 3 9791 5822</td><td rowspan="2">Brunswick Asia Pacific Group
41–71 Bessemer Drive
Dandenong South, Victoria 3175
Australia</td></tr>
<tr><td>Fax</td><td>+61 3 9706 7228</td></tr>
</table>

<table>
<tr><th colspan="3">Europe, Middle East, Africa</th></tr>
<tr><td>Telephone</td><td>+32 87 32 32 11</td><td rowspan="2">Brunswick Marine in EMEA, LLC
Avenue Mercury 8
B-4800 Verviers,
Belgium</td></tr>
<tr><td>Email</td><td>BME.service@mercmarine.com</td></tr>
</table>

Mexico, Central America, South America, Caribbean		
Telephone	+1 954 744 3500	Mercury Marine 11650 Interchange Circle North Miramar, FL 33025 U.S.A.
Fax	+1 954 744 3535	

Asia, Singapore, Japan		
Telephone	+65 68058100	Mercury Marine Singapore Pte Ltd 11 Changi South Street 3, #01-02 Singapore, 486122
Fax	+65 68058138	

Handling Damaged, Defective, or Submerged Products

IMPORTANT: Damaged, defective, or submerged batteries are at an increased risk of combustion. Do not use Avator batteries that appear damaged, feel hot to the touch, or appear swollen or bulging. Treat defective, faulty, or recalled batteries with these same precautions.

⚠ CAUTION

Avoid hazards from possible battery fire. Batteries that have been compromised by water intrusion or other means are potentially susceptible to combustion. If a battery is suspected of having been compromised, contact a Mercury Marine Authorized Dealer as soon as possible. Do not store the affected battery indoors, in a vehicle, or near any flammable materials.

IMPORTANT: A battery is assumed to be compromised if any of the following apply:

- **Battery has been submerged.**
- **Internal battery components have been exposed to water.**
- **Battery has been dropped from a height greater than 1 m (3.28 ft).**
- **Battery has external damage to the case, or is pierced.**
- **Battery has been recalled for a risk of combustion.**
- **Battery is not functional (excluding batteries that are at end-of-life or have discharged completely).**
- **Battery external surfaces are hotter than 60 °C (140 °F).**
- **Battery appears swollen or will not fit inside of the outboard cavity.**
- **Battery is venting foul smelling gas, vapors, or smoke.**

A submerged outboard and battery will require immediate attention once retrieved from the water. The battery may have water intrusion that can result in an internal failure that may result in a fire. This may occur up to several days after submersion. Use extreme caution if transporting a battery that has been submerged. Do not store a battery that has been submerged indoors, in a vehicle, or near any other combustible materials. Contact a Mercury Marine Authorized Dealer for further instructions before transporting the battery. If the entire outboard is submerged, it will require service to make sure all the components are cleaned and properly dried to prevent corrosion and future electrical issues. Contact a Mercury Marine Authorized Dealer for service.

Ordering Literature

Before ordering literature, have the following information about the power package available:

Model		Outboard Serial Number	
KiloWattHour rating or HP output		Battery Serial Numbers	-
			-
			-
			-

United States and Canada

For additional literature for the Mercury Marine power package, contact the nearest Mercury Marine dealer or contact:

Mercury Marine		
Telephone	**Fax**	**Mail**
(920) 929-5110	(920) 929-4894	Mercury Marine Attn: Publications Department P.O. Box 1939 Fond du Lac, WI 54936-1939

Outside the United States and Canada

Contact the nearest Mercury Marine authorized service center to order additional literature that is available for the particular power package.

OPERATOR SERVICE ASSISTANCE

Submit the following order form with payment to:	Mercury Marine Attn: Publications Department W6250 Pioneer Road P.O. Box 1939 Fond du Lac, WI 54936-1939
Ship To: (Copy this form and print or type–This is the shipping label)	
Name	
Address	
City, State, Province	
ZIP or postal code	
Country	

Quantity	Item	Stock Number	Price	Total
			.	.
			.	.
			.	.
			.	.
			.	.
			Total Due	.

Maintenance Log

Record all maintenance performed on the outboard here. Be sure to save all work orders and receipts.

Date	Maintenance Performed	Outboard Hours

MAINTENANCE LOG

Notes:

Predelivery Inspection (PDI)

Outboard Information

Outboard Information	
Outboard kilowatt rating/Mercury Avator power rating	
Outboard serial number	
Battery serial number(s)	-
	-
	-
	-
Propeller size	
Boat brand	
Boat model	
Boat length	

Technician information

☐ I certify that the following checks and inspections have been completed.

Inspector/Mechanic Completing Inspection	
First	
Last	
Technician ID	
Date	
Account number	

Outboard

☐ All service bulletin updates completed

☐ Secure transom bracket bolts - Transom bracket bolts tightened to the service manual specification.

☐ Ensure no accessories or hardware other than the transom brackets are secured to the boat using any of the four transom bracket bolts.

☐ Outboard power connections tight and sealed (covered) to prevent corrosion or accidental short circuits.

☐ Tiller model outboard

☐ Remote (helm) controlled outboard

☐ Proper propeller type and pitch installed

- [ ] Tighten the propeller nut to the specified torque. Refer to **Propeller Installation**.

Software and display

- [ ] Verified that the display is functional?
- [ ] Battery state of charge (SOC) levels report correctly and accurately on display.
- [ ] Verify all audible and displayed warning systems operate as designed.

Outboard steering - tiller models

- [ ] Tiller throttle directional operation can be changed using the throttle direction selector slide.
- [ ] Tiller throttle functions correctly.
- [ ] Lanyard included and functions properly.
- [ ] The tiller tension adjustment functions correctly.

Outboard steering - remote control models

- [ ] Steering turns lock-to-lock with no binding or increased friction when boat is not in the water.

Outboard steering - all models

- [ ] Steering in the water is responsive and torque feedback is minimal underway.
- [ ] If excessive torque feedback underway is noted, adjust position of anode trim tab to minimize feedback. Refer to **Trim Tab Adjustment**.

Battery

Battery	
Battery Wh rating	
Number of Batteries Installed	
Battery charge level in display	

- [ ] Batteries LEDs functional?
- [ ] Batteries indicate a fault?
- [ ] All batteries have the same color and number of LEDs illuminated for charge statuses?

Battery charger

- [ ] The battery charger is connected, the wiring is routed properly and securely mounted in the boat.
- [ ] The battery charger functions properly.

PREDELIVERY INSPECTION (PDI)

Helm rigging (if equipped)

- [ ] Accessible 10-pin diagnostic port (if applicable).
- [ ] The rigging in the helm is organized.
- [ ] Proper component installation orientation.
- [ ] Proper wiring retention and strain relief in place.
- [ ] All power cables, battery CAN cables, and 14-pin data cables are rigged with drip loops after each connection point, to prevent water intrusion.
- [ ] Harnessing routed free of obstructions and provides chafe protection.
- [ ] Unused SmartCraft and NMEA 2000 terminals have weather caps installed.
- [ ] List any corrections made to the helm rigging.

Correction 1	
Correction 2	
Correction 3	
Correction 4	

Batteries

- [ ] Are switch box connections tight?
- [ ] Has correct cable stacking been followed with protective covering installed?

General harness routing

- [ ] Proper switch box orientation and suitable mounting location.
- [ ] Proper data harness and power supply wiring retention and strain relief.
- [ ] Proper wiring service and drip loop to prevent water intrusion.
- [ ] If equipped, remote control and electric helm connections and strain relief are properly installed.
- [ ] An electrical bonding circuit has been installed on the boat.
- [ ] Harness routing free of obstructions, and provided with chafe protection.

On-the-Water Test

- [ ] Relief plug installed (if equipped).
- [ ] Verify the lanyard stop switch operates.
- [ ] Displays are fully functional and operational.

PREDELIVERY INSPECTION (PDI)

- [ ] F/N/R gear operation verified.
- [ ] Acceleration from idle RPM is normal.

Top speed - Trimmed power tilt (if equipped).	
Top speed - Tucked power tilt (if equipped).	

- [ ] Power trim operates fully throughout range (if equipped).
- [ ] Maneuver the boat to port and starboard ensuring proper friction of tiller.
- [ ] Boat maneuvers port to starboard and back in a predictable and controllable manner.

What was the battery charge level at before test?	

After On-the-Water Test

What was battery charge level after test?	
Were any electrical issues observed?	
Were any signs of heat to wiring or fuse holders observed?	

- [ ] Check battery levels post water test.

Submit full report with PDI. Completion date.	

- [ ] Clear all Freeze Frames and save a full report.
- [ ] Submit a full report with faults and history cleared to Mercury Technical Service and list email address.

Customer Delivery

- [ ] Daily inspections/maintenance/documentation included with the boat.
- [ ] Explained and demonstrated procedure to check battery levels.
- [ ] Explained and demonstrated changing throttle friction.
- [ ] Explained and reviewed long-term storage and charging.
- [ ] For portable units, explained how to remove and carry outboard and batteries.
- [ ] Reviewed operation, maintenance, and installation manual with customer.
- [ ] Provided and reviewed outboard warning systems to customer.

- [ ] Provided and reviewed battery charging recommendations including storage temperature requirements.
- [ ] Explained the Mercury Avator App (if equipped).
- [ ] Tiller models only, demonstrated and explained how to reverse the tiller handle rotation left to right.

Helm

Explain and review display features:

Range, distance to empty.	
Range, time to empty.	
Battery percentage remaining.	
Boat speed and source (GPS in display).	

- [ ] Electric steering operational and handling characteristics acceptable.
- [ ] Explained and reviewed the remote control features and operation (if equipped).

Boat

- [ ] Reviewed all boat electrical systems (lights, breakers, pumps) with customer.
- [ ] The customer approved the external appearance and condition of product.

Safety

- [ ] Operation of all safety equipment - explained and demonstrated.
- [ ] Operation of the E-stop lanyard - explained and demonstrated.
- [ ] Reviewed the boat capacity plate with the customer.
- [ ] Reviewed proper seating with the customer.
- [ ] Reviewed the importance of personal floatation devices (PFDs) and throwable PFDs.

Technician Certification

- [ ] I certify that the above information has been provided and explained to the customer.

Salesperson	
First name	
Last name	
Signature	
Customer name	

PREDELIVERY INSPECTION (PDI)

Salesperson	
Date	